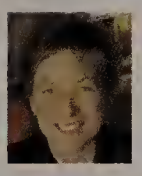
Networking's 50 greatest arguments of all time
From old ones, such as Token Ring vs. Ethernet, to never-ending ones, such as Macs vs. PCs. Read up and weigh in. **Page 18.**



Your Take: Collaboration
Fostering collaboration takes an effective mix of technology, planning and process, says Procter & Gamble's Laurie Heltsley (left), and her peers at T. Rowe Price and Boeing. **Page 34.**

NETWORKWORLD

The leader in network knowledge ■ www.networkworld.com October 29, 2007 ■ Volume 24, Number 42

Securing payment
Credit card security rules are becoming a contentious issue as debate over anticipated Payment Card Industry standards and their impact heats up. **Page 12.**

'Storm' roughs up NAC
The Storm worm has shown an ability to undermine NAC services, experts said at Interop last week. It's also showing a mean streak. **Page 14.**

Clear Choice Test:
HP's BladeSystem c3000 Enclosure provides a "data center in a box" that's well suited to branch offices. **Page 46.**

The WiMAX way
Cisco's buy of WiMAX vendor Navini shows the network giant sees broadband wireless access as a key technology. Just don't expect it to blossom overnight. **Page 56.**

Teleworking without the isolation

BY BRAD REED

Jon Pierce's teleworking office can't get much more casual.

Operating out of the third floor of a Cambridge, Mass., triple-decker apartment building, Pierce and several of his peers come to work dressed in jeans and spend their days pecking away diligently at their keyboards. They play music sans headphones to help pass the time, with the new Radiohead album garnering significant airplay in recent days. For leisure, on a nearby chair they've set up an electric guitar that can be played during break time.

While they may look like college roommates studying for a final exam, they're actually part of a growing trend in teleworking. After they spent years teleworking at home or at the local coffee shop, Pierce and his colleagues banded together with others to form Beta House (www.nwdocfinder.com/2225) for Web entrepreneurs. Co-working communities, which combine the relaxed, informal atmosphere of working at home with the sociability and cost-sharing of an office, have emerged as alternatives for telecommuters who miss having

See Co-working, page 20

Delays and XP stability making Vista resistible

Year after release, most say gains not worth pain

BY JOHN FONTANA

Adoption of Microsoft's Vista isn't slipping because of technical gotchas, but rather because of the repeated delays that have knocked it out of sync with corporate upgrade cycles. That has led many companies to sit tight on standardized Windows XP desktops, according to users.

Questions have been swirling about what's wrong with Vista, which shipped nearly a year ago and has seen lukewarm reception at best from the IT community. The fact is that many companies finally have stabilized users and applications on XP and have little interest in launching into the testing and management of an operating system whose compelling features are a handful of security and performance boosts.

What began as a revolutionary reworking of the Windows operating system was comparatively a whimper when it arrived three years later than first promised and with features, such as the WinFS file system, removed, which robbed it of its bravado.

Vista's reviews do include some technical concerns, but complaints concerning device-driver availability, application compatibility and user-account control features

See Microsoft, page 16

guide to STORAGE

IS FIBRE CHANNEL DEAD?

iSCSI over 10G Ethernet ultimately will dethrone Fibre Channel, experts predict, so it's not too early to start planning a migration. *Page 48*

BRIAN SMITH, TECHNOLOGY MANAGER AT MARKETING COMMUNICATIONS AGENCY GEM GROUP, DECIDED TO BAG FIBRE CHANNEL IN FAVOR OF ISCSI.

STEVE MARSEL

NEWSPAPER ■ $5.00

LOT 3

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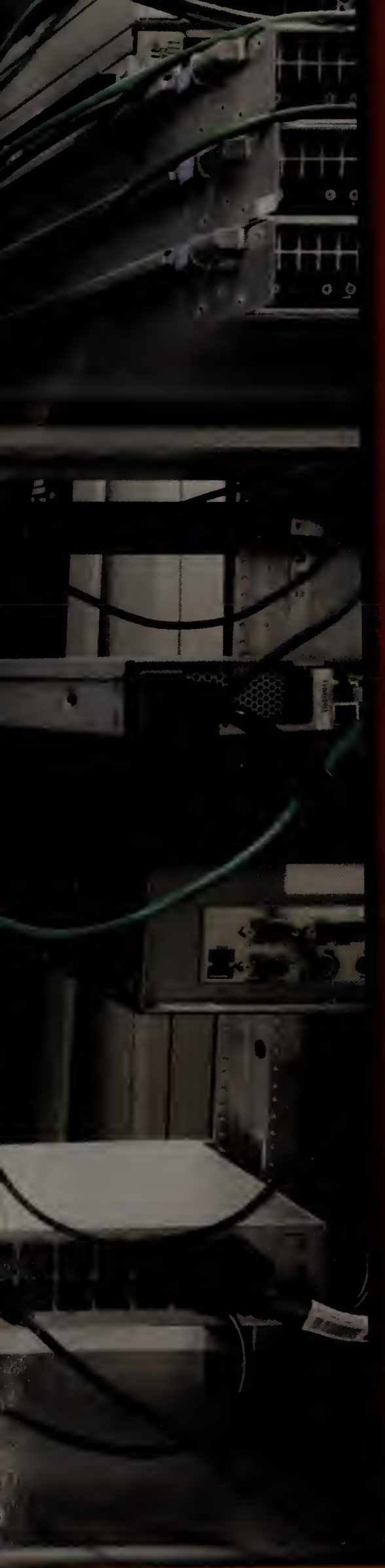

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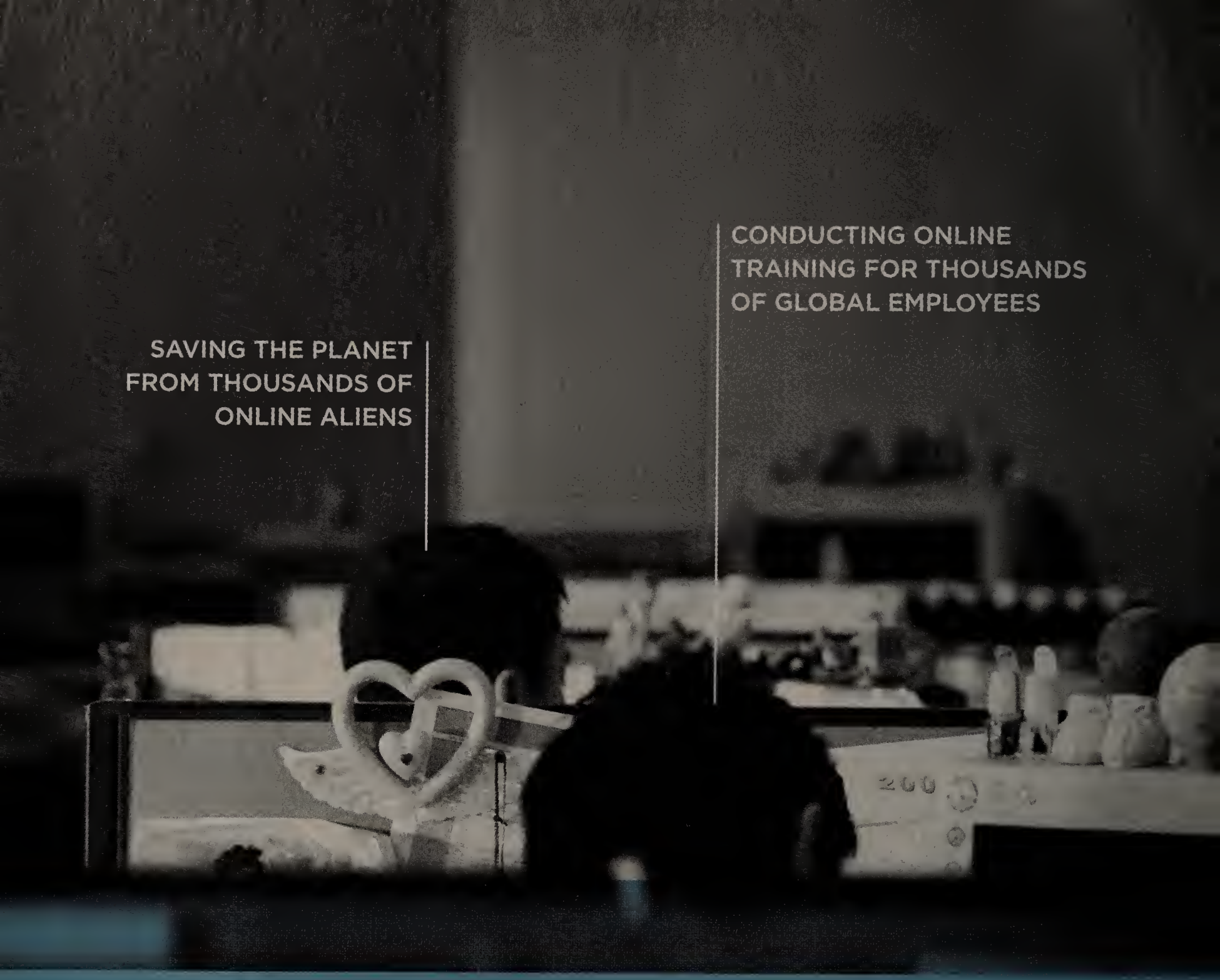

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GOODBADUGLY

Rockies sell out

After its effort to sell tickets to the three potential World Series games at Coors Field last Monday resulted in embarrassment after an external malicious attack overloaded the ticketing system, the Colorado Rockies baseball team gave it another go Tuesday and sold out all the games.

The problem with SOA

Nearly nine out of 10 large enterprises have insufficient governance over service-oriented architecture deployments, a new survey has found. Most SOA services go into production without governance, even though IT executives realize this puts them at significant risk, according to the survey involving 1,300 members of the SOA Forum.

Ballmer disses Google

Microsoft CEO Steve Ballmer said last week, in a swipe at rival Google, that his company has no plans to bid on wireless spectrum in January, because being a wireless carrier goes beyond its core competency. "Contrary to our competition, at the end of the day we think we have a core competence, and we think the telecom service provider industry has a core competence," Ballmer said at CTIA Wireless I.T. & Entertainment 2007 convention in San Francisco.

guide to STORAGE

IS FIBRE CHANNEL DEAD?

iSCSI over 10G Ethernet ultimately will dethrone Fibre Channel, experts predict, so its not too early to start planning a migration.

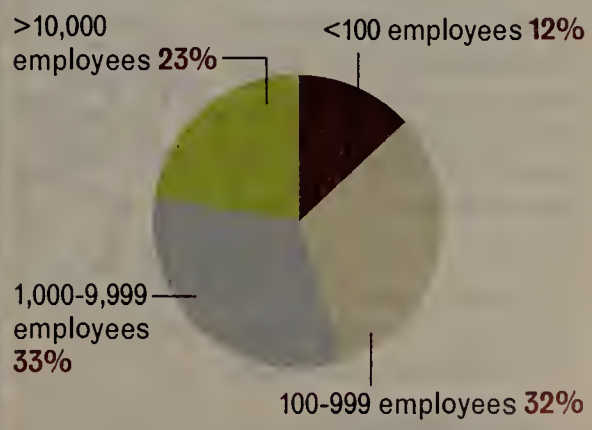
Page 48 Brian Smith, technology manager at marketing communications agency Gem Group, decided to bag fibre channel in flavor of iSCSI.

STEVE MARSEL

POLL

A snapshot of how networkworld.com visitors voted on a key networking issue last week:

Who's hiring in 2007 (by size of company)



Total voters for this poll: **588**

Vote and discuss: www.nwdocfinder.com/2231

SOURCE: NETWORK WORLD'S 2007 SALARY SURVEY

Getting tough with spammers

Re: Fooling spammers (www.nwdocfinder.com/2239):

I know many say we should not reply to spam and it should simply be marked and deleted. However, I've taken to replying to a lot of the spam I get lately. Most of the spam I get is 419 or other scams. Telling the offender that the FBI will receive their fraudulent e-mails and will be investigating them can put a damper on their sending if they read incoming e-mails. I used to get hundreds of spam e-mails daily. Over the last week I've gotten less than 40 TOTAL. Threatening the offenders seems to work.

> "I used to get hundreds of spam e-mails daily. Over the last week I've gotten less than 40 TOTAL. Threatening the offenders seems to work."

Mike Arienti

Discuss at www.nwdocfinder.com/2240

Why we're sticking with XP

Re: What's holding Vista back? (www.nwdocfinder.com/2241):

We will not be adopting Vista until it no longer requires Activation and is no longer a performance hog. My faculty complains bitterly of the home systems they have purchased being essentially pigs. The same goes for Office 2007. They much prefer the XP-based systems we provide, which are typically a year or more older than their home systems! Vista is a boondoggle Microsoft must fix, if they want to keep us using their kit.

Charles Soto

Discuss at www.nwdocfinder.com/2242

Hacking a hotel network

Re: Hackers gain access to private hotel network using Cisco VoIP (www.nwdocfinder.com/2243):

VLANs should never be relied on as a primary protection control or considered a security mechanism. And VLAN hopping has been around for a long time.

I won't go into the details of the hotel configuration that allowed this, but I will say it was done manually two years ago, during a customer-authorized penetration test. Since that time, I have seen many other customer VoIP environments that allow the same issue.

I wrote VoIP Hopper in order to allow VoIP administrators and network engineers to quickly test and automate the task, and improve the security of their VoIP environments.

I'm an independent security guy and was offering my opinion at ToorCon. I like both Cisco and Avaya, and work for neither company. Please don't shoot the messenger.

Jason Ostrom

Discuss at www.nwdocfinder.com/2243

Cracking down on porn

Re: California state site can't shake porn problems (www.nwdocfinder.com/2244):

The state's ISP should be talking with the federal government agency DISA. This agency uses the highest security networking gear on the market. Deep packet inspection is the key.

Steve Wilson

Discuss at www.nwdocfinder.com/2245

Slow rate of IPv6 adoption

Re: Eat your own (IPv6) dogfood (www.nwdocfinder.com/2246):

In the last few years, working in both a major Aussie bank (ANZ) and AUS branch of a multinational (BP), I have never ever heard IP6 mentioned once. There is simply no incentive for enterprise to migrate to IP6, and when it comes to businesses, they are never going to go with a new standard for anything other than benefit to their own bottom line.

With service providers, that is an entirely different game, but with enterprise? They'll shift when their providers force them to shift. Simple as that.

Heck even last year's CCNA syllabus does not cover ANYTHING on IP6. I don't know whether that's symptomatic or something to be worried about!

Johann Lo

Discuss at www.nwdocfinder.com/2246

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

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BLOGOSPHERE

■ **What hackers know about SQL Server Management Studio traffic.** New Microsoft Subnet blogger Chris Amaris is a security and network/systems management expert. He writes: "It is an often-overlooked fact that the SQL Server Management Studio is a potential source of exploits itself. Given the level of communications with data, code and passwords, a hacker can discover a ton of information from the traffic generated by the SQL Server Management Studio tool. This is the case when the tool is loaded on a client computer, rather than the server itself. Fortunately, the communications from the SQL Server Management Studio on a client to the SQL Server 2005 server can easily be encrypted. The steps to do this are: On the Object Explorer toolbar, click Connect. Select a service, such as the Database Engine. Select a server. Click on the Options button. Check the Encrypt Connection box. Click Connect."
www.nwdocfinder.com/2232

■ **Stop hounding employees over wireless personal calls.** In his Compendium blog, Adam Gaffin writes: "Bill Hughes is on a crusade to get penny-pinching businesses to stop quibbling and pay the full cost of employees' wireless phone service. *Network World*'s Robert Mullins reports from the CTIA wireless convention in San Francisco that Hughes, principal wireless industry analyst at In-Stat, says companies are being 'penny-wise and pound foolish' by requiring employees to subtract the personal calls they make each month before seeking reimbursement for their wireless bills. Given the time it takes an employee to perform the task rather than the job they were hired to do, the monthly savings to the company averages out 'to about 13 paper clips,' he says." **www.nwdocfinder.com/2233**

■ **New faces, new ideas.** Cisco Subnet blogger Jeff Doyle writes: "I'm attending RIPE 55 in Amsterdam this week. While I've regularly attended NANOG and APRICOT over the years, this is my first RIPE meeting. And while I always look forward to NANOG and APRICOT as a time to catch up with old friends, I find myself standing off by myself in the hallways here, sipping coffee and scanning the crowds for familiar faces. . . . So I'm looking forward to meeting some new people, perhaps making a few new friends, and of course drumming up some consulting business. But more importantly, because RIPE is focused on address policy and management rather than network operations, I'm looking forward to getting some different perspectives." **www.nwdocfinder.com/2234**

INTERVIEWS, THE COOLEST TOOLS AND MORE **IT VIDEO**

COOL TOOLS:

Wireless pictures worth 1,001 words

I-Mate's Momento digital picture frames can grab photos from USB drives, SD cards and through the Internet via a wireless network connection. Keith Shaw gives the digital picture frame a close look.

www.nwdocfinder.com/2236

PANORAMA PODCAST:

Real-life scary security stories

Want some Halloween scares? Listen to tales of the school district where compromised computers were giving up data for months and the CSO who thought his password was secure by leaving it on a Post-It Note under his keyboard.

www.nwdocfinder.com/2237

TWISTED PAIR PODCAST:

ISPs want to rule the world

Jason Meserve and Shaw gab about Comcast's broadband meddling, the Facebook/Microsoft love affair and whether the Internet can be a good substitute for a significant other.

www.nwdocfinder.com/2238

BEST OF NW'S
NEWSLETTERS

Readers respond: IT talent crunch — myth or reality?

Network/systems management: A recent article I wrote for *Network World* discussed how IT managers consider attracting, developing and retaining IT employees their No. 1 concern. The article got a few people talking in our online community One reader says: "I just filled an IT position vacated by a retiring baby-boomer. I'm not fully qualified for it, but my boss recognized my ability to learn and hired me anyway. There's a lot of OJT involved, but I'm able to successfully perform some of my duties and am learning the rest on the fly. I would suggest that employers looking for good IT help recognize there's a Plan B: hire someone who doesn't have all of the skills the job requires and through training and a little hand-holding help them become the IT worker they need."
www.nwdocfinder.com/2221

Wide area networking: In a recent paper posted at Webtorials, Cisco advocated the integration of WAN-optimization features into the router. This brings into focus once again the perennial question of exactly how many features should be incorporated into a single piece of equipment. In fact, longtime readers of this column will remember that about 10 years ago we were discussing whether the DSU/CSU should be integrated with the router. Consequently, we're starting a point-counterpoint discussion about whether WAN optimization is best accomplished within the router or by using a separate appliance. To start the discussion this week, Mark Weiner, director of product marketing, Cisco application networking services, addresses the positive side of making this move. Mark comments: "As WAN optimization is quickly becoming a mainstream technology for the enterprise, it is important to analyze and understand optimal deployment scenarios. While offering the deployment flexibility of both appliance-based and router-integrated solutions, Cisco believes there are economic, security and VoIP benefits to integrating WAN- optimization technology within the router – both logically and physically."
www.nwdocfinder.com/2221

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Vonage settles patent dispute

Vonage has reached a settlement with Verizon to resolve a patent-infringement suit first filed in June 2006. According to Vonage, the settlement could be worth as much as $120 million if the company does not win an appeals court rehearing for two of Verizon's patents. If Vonage does win a rehearing on the two patents, both of which enhance name translation servers, then the company will pay $80 million to settle the case. "This settlement removes the uncertainty of legal reviews and long-term court action and allows us to continue focusing on our core business and customers," said Sharon O'Leary, Vonage chief legal officer. The settlement comes just two weeks after Vonage agreed to pay $80 million to Sprint Nextel to settle a similar patent suit. **www.nwdocfinder.com/2252**

A buyer for SCO? Embattled SCO Group is offering the bankruptcy court a deal that could be hard to refuse. The company has received an offer of $36 million from JGD Management for its business and intellectual property. JGD Management, a current debtor of SCO, is an investing arm of York Capital Management, which owned more than 91,000 shares of SCO stock from March 2005 to September 2006. The amount includes a cash payment of $10 million, $10 million to fund continuing litigation with Novell and IBM, $10 million or as much as a 20% interest if there is a favorable legal ruling and $6 million for SCO's OEM agreement with Me, a mobile applications vendor. The $36 million offer is subject to approval from the bankruptcy court by Nov. 9. **www.nwdocfinder.com/2253**

IBM boosts storage with acquisition. IBM bolstered its line of storage products and services by acquiring NovusCG, a provider of consulting as well as software for storage analysis and reporting. IBM has collaborated with Novus on services engagements since 2003. Buying the company outright could give IBM a boost in its competition with storage powerhouse EMC. "Novus' assets and methodologies provide a standardized, repeatable approach for assessing and optimizing storage in multivendor environments," IBM said in a statement. "Its storage analysis and reporting software, tools and asset-based delivery model will enhance IBM's ability to produce services engagement results in reduced time." Novus' software includes Storage Enterprise Resource Planner, which provides a view of storage use at the business level, to identify unnecessary duplication of storage and enable accurate chargeback and capacity planning. **www.nwdocfinder.com/2254**

Cisco certifications and you

Network World chats

With the Nov. 6 deadline looming, Cisco author and certification expert ***Wendell Odom*** *answered readers' questions about training and certifications. For a full transcript, visit www.networkworld.com/chat/. Join us for upcoming chats: IP routing guru Jeff Doyle, Nov. 7; LAN switch security expert Christopher Paggen, Nov. 13.*

Ansh: I am preparing for the CCNA 640-082 exam and am pursuing my master's in telecom technology, graduating in December 2008. In addition to the CCNA certification, which other Cisco certifications will help me in landing a stable network engineer job?
Ansh, I think with a master's, I'd focus on adding to my resume anything that looks like (or actually is) hands-on experience with the gear, instead of more certs. If that's just not available, then I think that a CCNP (if you like working with routers/switches), CCVP (if you like voice) or CCSP (if you like security) would be a great next step. But with an advanced networking-specific degree, I'd rather see you spend time helping out in a Cisco lab on campus.

Smp: Hello, Wendell. Since the early '90s, I have been involved with Cisco and technologies such as routers. I am a strong believer in hands-on training. Where would one be able to do that at a relatively small price?
SMP, well, I could answer until you said "small price." ;-) If you want hands-on, and you don't care so much about the topics, several companies rent CCIE-level lab pods for almost nothing — then they make their money with $300 to $500 lab booklets. If you're looking for a playpen of gear for cheep, Google "CCIE lab pods," and that'll find some. I think a few of the e-learning-focused Cisco learning partners have remote lab pods with exercises. Finally, from your Cisco login, look for the customer E-learning connection — they often times have free (!!!) lab exercises on real gear.

BartKnight: Should I go for CCNP or CCIP after my CCNA? Which is the hottest certification today?
Bart, hands down CCNP between those two. However, if you're looking for hot as in get a job, CCVP and CCSP are probably hotter, IMHO.

HarryB: Wendell, I have my CCNP, if CCVP and CCSP are the hot certs, where do you classify CCDP today?
HarryB — great question. I think that CCDP has always been kind of a red-headed stepchild kind of cert. As for getting jobs, I think it gives an edge to getting a presales job. It just doesn't have any buzz. However, I'm thinking it might have a resurgence once Cisco gets their new CCIE-level design cert established — maybe CCDA will be a prereq. Who knows? I find the underlying skills very important, but the cert just doesn't sizzle for some reason. ■

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Payment-card standards debated

BY ELLEN MESSMER

Payment-card security rules that keep customer credit and debit card information from falling into the wrong hands are becoming a contentious issue as debate over anticipated Payment Card Industry standards and their impact heats up.

In addition to the dozen rules for network security that comprise today's PCI Data Security Standard 1.1, the PCI Security Standards Council — which represents Visa, MasterCard, American Express and Discover — anticipates expanding requirements next year that could relate to wireless use and Web-application security.

The PCI Security Standards Council's Bob Russo

The council's general manager Bob Russo last week said the organization is devising new standards for how to design and evaluate any Web-facing business applications for credit-card processing, as well as security rules for wireless.

A final decision is still pending, Russo said, because there's growing resistance to new requirements for payment-card holders, many of whom haven't achieved official compliance yet with existing PCI standards. He noted the council doesn't enforce PCI compliance, which is the job of the card associations with the banks.

The big concern now is that card-processing applications can be hacked, and "we're looking into the best way to handle the application security," Russo said, adding he anticipates a decision on this in about a month. A decision to go forward may mean applications used to process credit cards would have to be evaluated and approved by a listed of certified evaluators.

One change to the PCI security rules that's certain is the release before year-end of a new self-assessment questionnaire for PCI that merchants handling payment-card data will be expected to fill out when requested by their banks as part of the PCI compliance process.

"Today, it's a one-size-fits-all, but going forward we'll have four different versions based on the merchant's business," Russo said. "For instance, if they're small and just doing dial-up, there's no need for them to answer 200 questions; we'll just have 30 or 40 questions."

The PCI council also intends to establish new PIN Entry Device (PED) requirements for equipment in an effort to combine the various equipment-security programs that today are administered separately by card associations MasterCard, Visa and JCB. Russo said by year-end, the council's Web site probably will detail a list of approved PED equipment.

There's been some "grumbling" and "push-back" among merchants aware of some of the proposed changes, Russo acknowledges. Although specifics aren't published yet, the idea of mandating new payment-card application-security design and testing guidelines makes some IT managers anxious about how it could impact their operations.

"I'm hoping what they come up with is additive, not a complete shift," said Claude Gigoux, manager of networks and telecommunications at Princess Cruises, which achieved PCI compliance in July through an audit of its offices and its cruise ships, whose wireless-based networks and applications handle payment-card information. "You're going to get a rebellion if they say you have to use this methodology or other."

In general, PCI DSS 1.1 has been beneficial, Gigoux says, because it's specific about security guidelines, such as not transmitting credit-card information over a public network in the clear, without encrypting it.

"Visa and its processors don't always comply with this," Gigoux asserted. "Now and then, we'll get an e-mail directly from Visa out of the blue on the Internet, telling us, here's the card number and we have a problem with it."

Visa declined to comment on the matter directly, although in an announcement last week it said 65% of the largest U.S. merchants (those it calls Level 1 merchants, processing 6 million or more Visa transactions) have validated compliance with the PCI DSS 1.1, an increase from 36% in December 2006. For the rest, Visa says it has begun levying fines of $25,000 per month. Visa also said validation for the PCI security standard among midsize merchants has reached 43% as of Sept. 30, an increase from 15% last December. This Level II group is expected by Visa to validate its compliance by Dec. 31. Together these merchants constitute two-thirds of Visa's transaction volumes, the company said.

Meanwhile, because the PCI standard calls for use of intrusion-detection systems and firewalls, Princess Cruises has found that centralizing log data using a security-information manager — in this case, ArcSight's Event Manager — has helped in making changes pertinent to PCI and providing information relevant to PCI auditors.

PCI security also is of keen interest to Verizon Business, which last week announced its managed-hosting data centers in San Jose and Beltsville, Md., achieved PCI compliance after an audit by Trustwave, a qualified security assessor (QSA) under the PCI program.

"It took us a year to get through the process," says Laura Elliott, manager of IT solutions product marketing at Verizon Business. "The reason we pursued this is because we have a large number of customers in the retail space. We didn't have to do this because we're not handling the card data, but we know that in order for the retailers to have PCI compliance, they may have to check off whether their service provider does."

Verizon has a multifaceted view on PCI because one of its divisions, Cybertrust, is a PCI approved scanning vendor and a PCI QSA conducting security audits on merchants' networks when merchants request this service to meet demands from their banks or face possible fines and other punishment.

"One reason PCI is so demanding is because it calls for documented policies and how they're getting carried out," says Barbara Mitchell, Verizon manager of security product marketing. Some of the anticipated changes coming from the PCI Security Standards Council, such as the application security proposal, are getting "pushback from the retail industry," she says. ■

InBrief

Verizon to shell out $1 million

Verizon has agreed to pay $1 million to settle an investigation of the company's alleged deceptive marketing practices conducted by the New York Attorney General's office. At the heart of the investigation were Verizon's advertisements that promised consumers "unlimited" broadband for its NationalAccess and BroadbandAccess services. New York Attorney General Andrew Cuomo noted that the terms of service for Verizon's "unlimited" services barred users from performing such high-bandwidth activities as downloading movies or playing video games online. When users were deemed to be "excessively using" their services, the attorney general said, they were cut off from service and unable to obtain refunds.

High-tech wages climbing

New research shows that technology professionals earned about 5% more in wages during the third quarter of this year than they did during the same period in 2006. Data from talent and outsourcing services company Yoh shows that wages for computer scientists, engineers and other technology professionals increased 6% in July, grew 4.64% in August and improved 5.79% in September, compared with the same months in 2006. Yoh also reports that technology wages "consistently outpaced national trends" in 2005 and 2006.

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Storm worm can befuddle NAC

Interop attendees hear of new threats, countermeasures . . . and retaliation

BY TIM GREENE AND JIM DUFFY

NEW YORK — A newly discovered capability of the Storm worm could invalidate results churned out by NAC products, attendees at Interop New York learned last week.

This new trick is Storm's ability to interrupt applications as they boot up and either shut them down or allow them to appear to boot, but disable them, says Josh Corman, host protection architect for IBM/ISS.

Users will see that, for example, antivirus is turned on, but actually it isn't scanning for viruses, or as Corman puts it, it is brain-dead. "It's running, but it's not doing anything. You can brain-dead anything," he says.

NAC vendors acknowledged at the show that this capability could thwart the endpoint checking that their products perform. NAC scans devices before they gain admission to networks, looking for properly patched operating systems, personal firewalls, and antivirus software that is updated and turned on.

The software seems turned on but is doing nothing that would invalidate the scan, representatives of NAC vendors ConSentry, Juniper and McAfee say. "This is an example of why preadmission NAC is not enough," says Michelle McLean, director of marketing for Consentry.

Analyzing what devices attempt to do once they are on the network — postadmission NAC — is necessary as a backstop to preadmission tests, says Vimal Solonki, senior director of product marketing for McAfee.

Storm also exemplifies the sophistication of new malware that retaliates against researchers studying it with the goal of stamping it out, Corman revealed at the show.

The worm can figure out which users are trying to probe its command-and-control servers, and it retaliates by launching DDoS attacks against them, shutting down their Internet access for days, he says.

"As you try to investigate [Storm], it knows, and it punishes," he says. "It fights back."

As a result, researchers who have managed to glean facts about the worm are reluctant to publish their findings. "They're afraid. I've never seen this before," Corman says. "They find these things but never say anything about them."

The sheer variety of attacks is soaring, according to a study released at the show.

"The motivation has shifted from prestige to profit to political," Corman says. That means that rather than writing code for massive disabling of systems and reveling in twisted glory, the writers of malicious code are writing for profit or to commit cyberterrorism.

Just as motivation is shifting, the quality of the attacks is improving, he says. They target individuals with the goal of stealing intellectual property or valuable personal data.

Storm fools NAC

Here's what NAC vendors say to do about the problem:

- Use postadmission NAC products that can detect infected machines based on their behavior relative to the policies set for them.
- When they're available, use NAC preadmission products that rely on security chips placed in the computers that would detect that something is amiss.
- Supplement NAC with other security software, such as antirootkit products.
- Rachet down access rights as tightly as possible to limit the damage infected machines might do.

One security executive at the show who could not speak for attribution, because his company does not allow it, said he has encountered attacks tailored for individual executives within his corporation.

Ryan Sherstobitoff, product technology officer for security vendor Panda Software, says makers of malware no longer write it and toss it into the wild, but test it to find out if it is effective against likely corporate defenses. These criminals perform quality assurance and even offer the equivalent of service-level agreements on how effective their wares will be, he says.

Meanwhile, showgoers were told they need new architectures to protect corporate networks against changing threats while opening those networks to anytime, anywhere access.

Architectures optimized for distributed applications in 2005 evolved into those focused on security and IT consolidation in 2006, says Chris Silva, an analyst at Forrester Research. This year's wave will be LAN infrastructures designed to accommodate disaster recovery and further consolidation.

Enterprises want their networks to function as a utility, and wireless coverage will drive infrastructure deployments, Silva says. He believes IEEE 802.11n wireless LANs and WiMAX will become pervasive in the 2011-13 time frame.

HP ProCurve believes the next-generation LAN architecture will be a 50-50 mix of wired and wireless infrastructures, consistent with the Adaptive Edge vision the company put forth in 2003. That plan involves putting more network intelligence, such as 802.1X authentication as well as Layer 2 and Layer 3 QoS and NAC security services, in enterprise wiring closets. All processing is distributed, and all intelligent devices are able to execute services and initiate resource access control.

"Those are the foundational elements of how these issues would be addressed," said John McHugh, vice president and general manager of HP ProCurve. He said the next-generation LAN should not be based on a constraining proprietary architecture with features that are "bolted on" instead of integrated into the fabric.

"This is very difficult with an overlay structure," he said. And it should be done in a way that is open — a hosting environment for best-of-breed" products.

Along with ubiquity, users will demand security and integration with wired and voice infrastructures. That's fine with wireless companies, such as Trapeze Networks, and secure-switching vendors, such as ConSentry.

Components of the "new" LAN include mobility, security and identity-based networking — the ability to configure users' access and services as opposed to what switch and router ports they can use, says David Cohen, Trapeze director of marketing.

The LAN architecture will encompass a hybrid of distributed forwarding and centralized forwarding based on the application: distributed for latency-sensitive traffic, such as voice over WLAN and ".11n ready" applications; and centralized for security-sensitive traffic, such as guest access, Cohen says.

Switches will support "virtual stacking," Cohen says, in which capacity is pooled and automatically assigned, remapped and balanced across access point when they are added to or subtracted from the network.

This is not unlike the challenges facing enterprises in branch-office networking. More than 90% of employees work in a branch or remote office. Yet the branch is made up of a disparate set of technologies, capabilities and functionalities that increase the cost of doing business and the inconsistency of the customer experience, says Steve Hardy, Avaya director of converged communications product marketing.

"The branch is a much more strategic part of the business plan," Hardy says, adding that it's morphed from a cost center to a profit center.

Considerations enterprises must deal with include whether applications need to be centralized or distributed to branch locations, he says. Integrated security is "critical," as is an "open, standard converged infrastructure."

But therein lie some opposing goals, Hardy says: maximizing application reach while minimizing TCO. That's why enterprises will increasingly adopt hybrid models where some applications are hosted at the headquarters site; others in the branch; and others with the company's telecom carriers. ■

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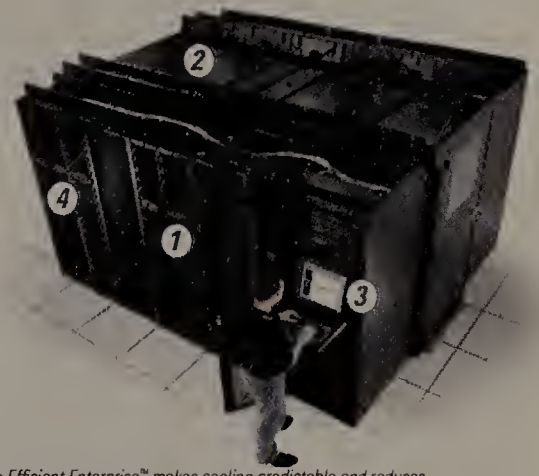

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Microsoft

continued from page 1

have not been outside the scope of the technical issues raised about previous Microsoft operating-system releases, experts say.

Perhaps the one true failure of Vista is that Microsoft again was unsuccessful in stamping out the perception that a new Windows operating system isn't worthy until the first service pack. Vista Service Pack 1 won't ship until early 2008.

A forthcoming study by Forrester Research shows that 52% of respondents have no plans to roll out Vista or don't know when they might do it. The study shows 11% don't plan to start a rollout until 2009, and another 6% are waiting until 2010.

The study also shows that 88% of companies with 5,000 to 20,000 users have standardized on XP. In fact, demand for XP is still so strong that users last month forced Microsoft to extend XP's availability another five months.

Repeated delays in the delivery of Vista, which came five years after XP first shipped in late 2001, moved the operating system's release to a point where many users had begun or completed hardware-refresh cycles.

"When we look at all the activity in the bumper-crop year of PC purchases in 2005 and 2006, we see that a lot of companies have gone through upgrade cycles, so the likelihood of them turning around and saying, 'I am going to deploy new PCs with a new operating system for everybody in the company' would be relatively low," says Ian Lao, senior analyst at market-analysis firm In-Stat.

Lao says such issues as testing and training make companies conservative and intent on staying with XP. "The average man on the street is happy with XP," he says.

Users are stepping up to Vista, but only after carefully reviewing user and network needs and the needs of their applications. "The approach that Bechtel is taking is pragmatic," says Fred Wettling, manager of IT standards and strategies for the San Francisco engineering and construction company. "We have gone through forklift upgrades before with Windows 95 and 2000, and it was a royal pain. Our approach on Windows 2000 and XP is the same one we will use with Vista, and that is to make it part of the normal evolution." That will happen early in 2008, when Bechtel begins buying Vista PCs.

The timing, however, isn't arbitrary. Bechtel began last January and spent four months putting a standard desktop configuration together before it began a pilot. In parallel, Bechtel was testing its 500 applications using the Microsoft Application Compatibility Toolkit. "Our applications compatibility has gone pretty well," Wettling says.

One bump in the road has been BitLocker, the disk-encryption technology in Vista, which lacks centralized management controls that Bechtel requires. The company is rolling out BitLocker, however, because the encryption technology it uses is not ready for Vista. Another feature generating interest is Vista's Meeting Space, which makes it possible to create ad hoc networks via peer-to-peer features enabled by Vista's support of IPv6. "Stuff like that is useful to Bechtel; when we start a new job site, we don't have a network to support it," Wettling says. Bechtel forecasts it will be a three-year process to upgrade the company's 18,000 desktops around the world.

For some, other projects influenced the decision about Vista.

The city of Indianapolis just completed a migration from Novell GroupWise to Microsoft's Outlook. It is consolidating servers on its VMware platform, and it plans to deploy Office 2007 and SharePoint Server in 2008.

Vista will become part of that rollout, according to Shital Patel, CIO for the city, who plans to dovetail it with the normal refresh cycle of PCs. She says the city is working through application-compatibility issues and will confront hardware problems, given its standard desktop configurations today.

But technical problems with Vista aren't near the top of the issues list. "For the most part, these are similar to issues we have had in the past," Patel says.

Part of the Vista planning is logistics: The city has 2,000 mobile laptops it needs to get back into the office to complete upgrades. The city must coordinate with 54 departments and 74,000 users. "The biggest issue is change management, moving away from familiarity users have with software," Patel says.

Several studies are bearing out that users are taking a calculated approach to Vista. In the Forrester report, 42% of Vista deployments for the 565 IT managers interviewed will start between 2008 and 2010, with 17% of those taking place in 2009 and 2010.

Forrester Analyst Benjamin Gray, who conducted the survey, says the most telling numbers were when data was compared year over year. An earlier version of the survey published in May 2006 found large companies had aggressive Vista plans, with 34% planning on starting deployments in 2007.

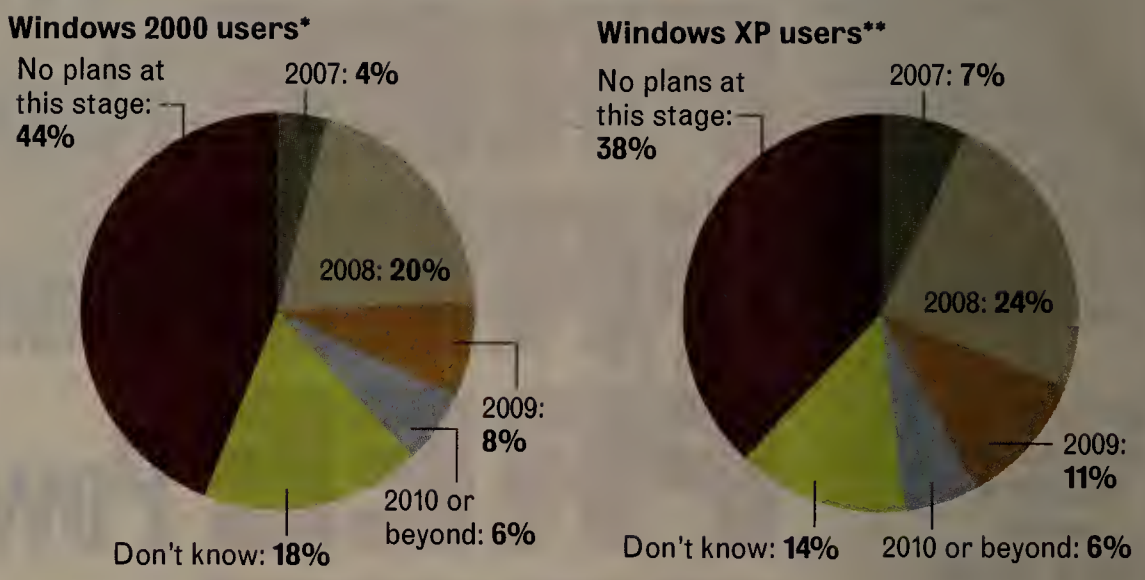
"When we refreshed the study in the third quarter of 2007, that number had dropped precipitously down to 7% for deployment starts in 2007. Vista was still on their road map, but the questions are 'when' and 'how,'" Gray says. Besides application compatibility and hardware issues, a third factor in the technology equation is Service Pack 1, he says. "Experience was telling companies they should not even be considering deploying a new operating system before SP1," he says.

It's a reputation Microsoft has been trying to live down for years. With Vista, the company has released piecemeal updates to improve security and performance and reduce start-up times. Microsoft also has released two reliability and compatibility packs. The company is recommending that only those who need the upgrades install them and that others wait until Service Pack 1. All the advance updates will make it into the service pack, which is now in beta with private testers. ■

Plans for Vista

Vista has been available for nearly a year and achieved only a 2% penetration into corporate computing environments. The bulk of users on Windows 2000 and XP, however, are still assessing their plans.

What year do you plan to start deploying Windows Vista?



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Networking's 50 top arguments

BY NETWORK WORLD STAFF

Perhaps the only thing more fun than working on and playing with network technologies is arguing about them. Some arguments, such as Token-Ring vs. Ethernet and Windows vs. OS/2, are history, while others, such as Macs vs. PCs, may never end. Here's a sampling of our collection of the nastiest, most colorful and in some cases, still very much undecided, arguments in the network industry (read the entire package at www.nwdocfinder.com/2249).

Windows vs. OS/2

Dr. Phil might tell you that no one wins an argument, but spare us the hugs and psychology. IBM no longer ships (R.I.P. 2005) or supports (R.I.P. 2006) OS/2, which is now sold under the name eComStation by Serenity Systems. Try getting that factory-installed on a Dell laptop.

The history of Windows is a bit richer (in many ways) and proves the good doctor wrong.

Of course, the irony here is that IBM and Microsoft teamed in 1985 to develop OS/2. Two years later they had a product. Three years after that, Microsoft had Windows 3.0 shipping on many PCs and was on its way toward NT while OS/2 was gathering dust on computer superstore shelves as a stand-alone product that lacked a full complement of device drivers. The IBM/Microsoft relationship continued to sour, and by the time the last version of OS/2 — the Warp 4 version — shipped in 1996, IBM was on its own. Today, OS/2, with the dubious distinction of being the first operating system to have a fan club, can be found in small pockets of the computer landscape, such as in bank automated teller machines and the French national railway's ticket machines.

Windows? We won't bother rebooting that story here.

CDMA vs. GSM

The real problem with the cellular industry is all the blasted acronyms. Basically, you've got different ways of making a cellular voice or data call, with vendors lined up behind both. AT&T, and its Cingular acquisition, and T-Mobile are the major GSM carriers in the United States. Sprint (which merged with Nextel), Verizon and Virgin Mobile are the chief CDMA carriers. In the new millennium, their chief competitive tactic has been cutting prices.

But that's changing. Both groups are speeding up their deployment of much faster 3G versions of their cellular radios. For CDMA, that's various "revisions" of EV-DO (Evolution-Data Optimized), currently Revision A. For GSM, it's UMTS (Universal Mobile Telephone Standard) coupled with HSDPA (High Speed Downlink Packet Access). The peak speeds claimed by the carriers show considerable overlap. The point is: They're way faster, and people want faster.

"From the evidence we've seen and the research we've done, there is absolutely a pent-up demand for 3G from enterprises," says Mike O'Malley, director of external marketing for Tellabs, speaking to *Network World* earlier this year. The company sells mobile wireless equipment to carriers. "That's because it offers Wi-Fi speeds or better, but unlimited roaming. People don't want to walk from Starbucks to Starbucks for connectivity."

But the higher speeds also make possible new digital data services, both information and entertainment, based on a wide range of media types, including pictures, music, TV and streaming video. These media and the spread of wireless push e-mail is giving cell phone users a taste for what this new "always-on" data network can do.

This is one argument that's far from over.

IPv4 vs. IPv6

The argument about how best to upgrade the Internet's main communications protocol raged in the Internet Engineering Task Force in the early 1990s. By then, experts realized that the Internet would eventually run out of address space with the original version of the Internet Protocol, known as IPv4.

The issue of what direction to take with the next-generation of IP came to a head at a 1994 IETF meeting in Toronto. Ultimately, the IETF decided to replace the 32-bit addressing scheme in IPv4 with a 128-bit addressing scheme in IPv6. The standards body tried to create other reasons to upgrade to IPv6, including built-in security with IPsec and easier management through autoconfiguration of devices.

Nearly a decade after IPv6 was completed, the network industry has yet to embrace the new protocol. That's because a forklift upgrade to IPv6 is too expensive and time-consuming for a carrier or enterprise, with little measurable return. Instead, the network industry expects a gradual transition to IPv6, which will probably run side by side with IPv4 for many years to come.

Now it appears that IPv6 finally is winning this argument. The American Registry for Internet Numbers recommended in May that the Internet community start migrating to IPv6.

In fact, some industry experts predict that there are only about 1,200 days left until the Internet runs out of IPv4 addresses. Leading the charge to IPv6 is the U.S. government, which has required that all agencies support the new protocol in their backbone networks by June 2008.

ONLINE: Ready to debate?

Check out all 50 of our greatest networking arguments and then rank them.

www.nwdocfinder.com/2249

Software-as-a-service vs. packaged apps

There's no doubt software-as-a-service is revolutionizing the business applications market. While most people say the death of packaged software has been greatly exaggerated, that won't stop a few software-as-a-service proponents from claiming the battle has been won.

"Software is dead. Dead, dead, dead, dead," Jonathan Bush, chairman and CEO of athenahealth in Massachusetts, claimed a few months ago during a panel discussion on software-as-a-service.

Athenahealth provides Web-based services to doctors' offices, and like other software-as-a-service vendors, will tell you its product is superior to traditional applications because of its ease of use, frequent upgrades and monthly payment plans, which are supposed to force vendors to provide better customer service.

In Bush's view, the Web equivalent of old-school software would be Yahoo charging $2,000 a seat for the ability to look up directions, rather than offering a free online mapping tool, as it does today.

"There's an acknowledgment that software in and of itself isn't differentiating a thing," Bush said. "You've got to give software, and then you have to sell work."

But it's not hard to find software-as-a-service proponents who acknowledge this new trend isn't likely to spell the doom of packaged applications.

It's more likely that software-as-a-service and packaged applications ultimately will coexist and complement one another, both within vendors' product lines and within enterprises, says Jeffrey Kaplan, who runs consulting firm Thinkstrategies.

Still, coexistence isn't exactly the same as peace and harmony, Kaplan acknowledges. There's plenty of room for sniping between the two camps.

"The legacy application folks tend to believe their applications are more robust, more full-featured, more mature, more powerful," Kaplan says, "whereas they consider software-as-a-service to be a skinnied-down version of the application for amateurs."

Carolyn Duffy Marsan, John Fontana, John Cox, John Brodkin contributed to this package.

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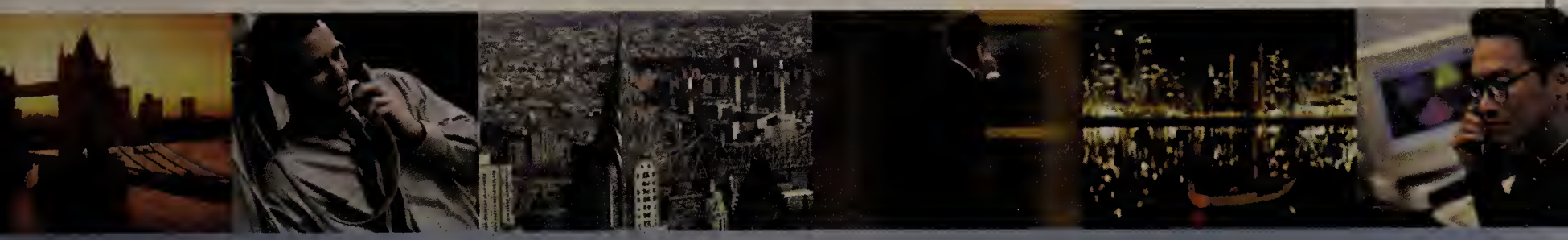

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Co-working
continued from page 1

person-to-person interaction during work.

"Over the past year or two, these co-working spaces have been sprouting up around the country in recognition of individual entrepreneurs who have taken to working out of coffee shops but who still desire the kind of human interaction that they can't really get there," says Pierce, a software developer who co-founded Beta House in February to serve as a working space for independent Web developers, product managers and start-up owners. The project, say Beta House members, has been a rousing success so far.

"Personally, I'm very happy to have a four-burner gas stove, a grill on the back porch and a fridge full of beer at work," says Brian DelVecchio, a software developer working at Beta House. "These are things that I find make a much more comfortable place to work. It's easy for me to focus here and get deep into things, instead of working in a cubicle."

The draw of co-working

Nationwide there are roughly 16.2 million self-employed teleworkers and 12.4 million teleworkers employed by an outside party. A 2007 CDW survey of more than 2,000 workers showed that 79% of workers employed in the private sector and half of workers employed in the public sector worried about feeling isolated and missing human interaction if they were to start telecommuting. Roughly a third of both private and public-sector workers also reported that they didn't want to stay at home during work.

It is in this context, advocates say, that co-working provides a valuable service. For although working in your underwear may seem appealing at first glance, many teleworkers say they quickly began to feel isolated and they missed having colleagues nearby to bounce ideas off of.

"For the past 10 to 15 years, we've lived in an age where you can work in socks and underwear, but that doesn't prevent you from going insane," says Charles Planck, CEO of Articulated Impact, the founding parent company of the Washington, D.C.-based Affinity Lab (www.nwdocfinder.com/2226) co-working space. "You find that if you're at home too much, you lose your edge in dealing with people."

Most co-working spaces are designed less like offices and more like lounges or coffee shops. While private desks are available to paying customers, many co-working spaces have significant common areas dedicated to encouraging interaction. Citizen Space in San Francisco (www.nwdocfinder.com/2224), for instance, rents out only seven private desks and uses the rest of its space as a common area that has a full library, meeting areas that come with white boards and a projector, and a popcorn machine. Citizen Space co-founder Tara Hunt says she and her partner Chris Messina designed their co-working space with the idea of maximizing sociability and idea-sharing.

"When you're an independent worker, there are times when you're hitting a wall when it comes to getting new ideas," Hunt says. "We didn't start out Citizen Space to be a rent-a-desk sort of office. Rather, we wanted to work among really smart, turned-on people." She says one of the most interesting aspects of Citizen Space is watching how people get into daily rhythms of mixing work with social activity. Typically, people will mingle briefly at the beginning of the day and then will settle down and work for about 45 minutes before needing a break, getting a cup of coffee and mingling some more. This differs from coffee shops, she says, where people generally don't know each other, and also from executive suites, where too much conversation often is frowned on.

Co-working provides people with the sociability and cost-sharing of an office.

Of course, sociability and idea-sharing are only one part of what makes co-working appealing. Another crucial benefit is being able to share costs with others for such work essentials as Internet connection, phone service, office supplies and rent. Planck says that paying $895 per month to Affinity Lab guarantees not only a desk but also two DSL pipes, reference books, a kitchen and conference room for common use, a color copier and printer, and 24-hour access to the facility. A $275 monthly membership to Independents Hall in Philadelphia (www.nwdocfinder.com/2227) gets workers a full-time desk, wireless Internet connection, equipment storage space and a conference room.

Beta House charges $200 to $400 per month, per desk, and rates depend on how much time a member spends working in the space. With 12 people working out of the space at any given time, Pierce says that charging in the $200 to $400 range is optimal for covering the site's expenses, which he says run an average of $3,000 to $3,500 per month.

"Our costs are pretty much equally split among our members," he says.

A philosophy of open source working

People who operate in co-working spaces often refer to their way of work as a "movement." Although co-working spaces have significant differences in their services and culture, co-working as a whole generally is defined by four major values: collaboration, openness, community and sustainability. Essentially, co-working spaces encourage their members to share as many of their ideas with each other as possible and not to feel they're in competition with their co-working colleagues. This principle is encouraged by all major co-working spaces, although different spaces have different methods of prodding their members into being more open. Citizen Space, for instance, explicitly prohibits its members from signing nondisclosure agreements (NDA) with one another. Affinity Lab, on the other hand, has no specific policy on NDAs, but Planck says that all members must be "people who work and play well with others."

While none of the co-workers interviewed for this story say they ever have encountered a situation where two people employed by competing firms ever had to inhabit the same co-working spaces, they do concede that such a situation could easily arise. In that case, they say the two parties would be encouraged to talk openly with each other, and they would have to understand that their rivalry does not exist within the confines of the co-working area.

"We're a community space first, and that means the people who work here come first, and the companies they work for come second," says Alex Hillman, one of the co-founders of Independents Hall.

Of course, this model of openness has given many employers and investors pause. When Beta House member and co-founder Greg Gibson started raising capital to start his own virtual goods business, many venture capitalists expressed concern about co-working sites' vulnerabilities to hacking and other security threats. While he understands these concerns, Beta House's password-secured wireless cable modem still is a more secure connection than what most teleworkers use, he notes.

"We actually had quite a bit of pushback from some of the investors about being located in a space like this," Gibson says. "Their concerns were mostly security, confidentiality, and concern that the guy next to you is going to steal your ideas. And we had to do quite a bit of work to explain the benefits vs. the risks."

And what about investors who insist on fretting about the Beta House's Internet security? "We tell them, 'Hey, it's much less of a worry here than it would be at Starbucks,'" Gibson says. ■

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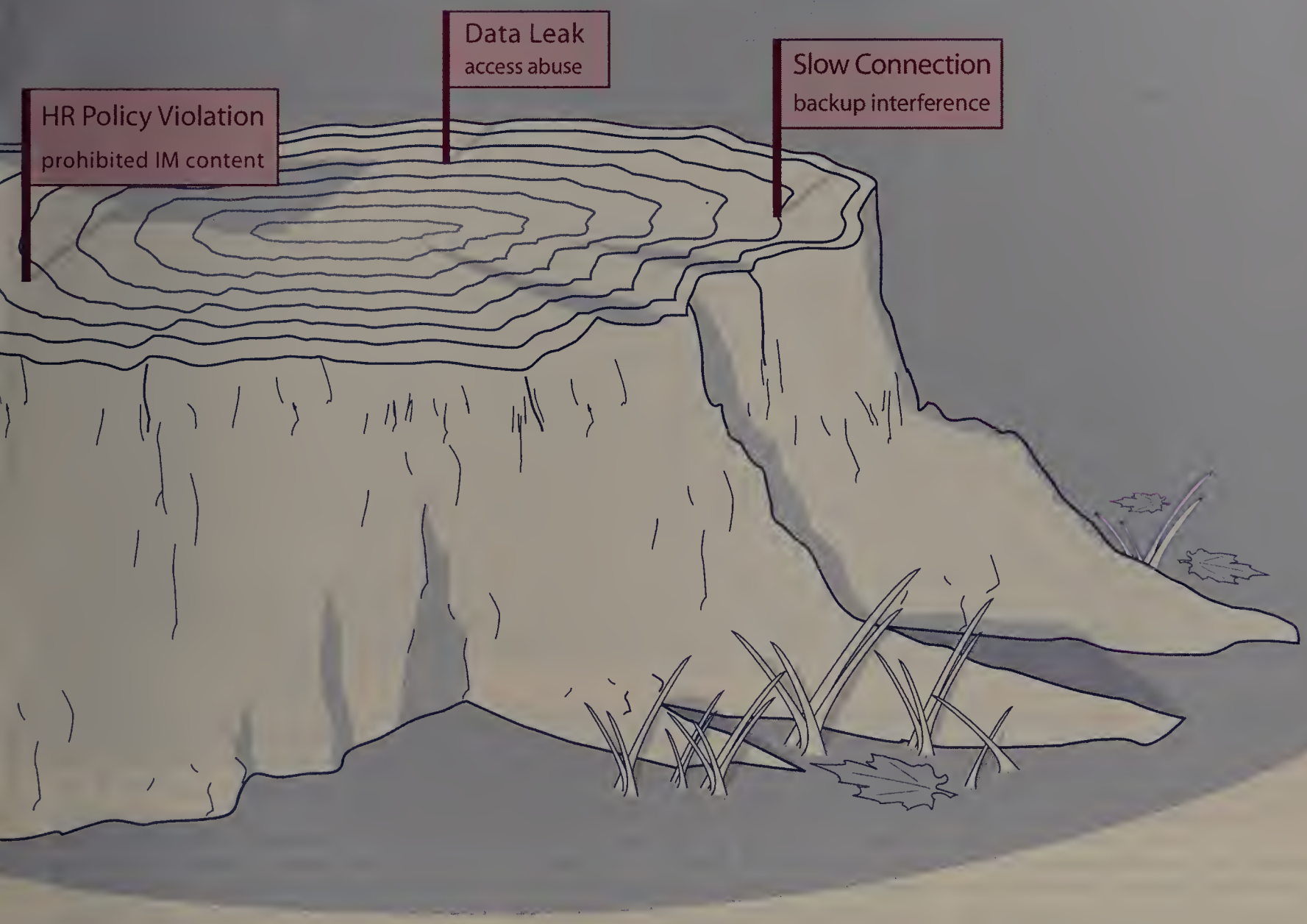

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Oracle and BEA: What happened?

A hostile takeover may be coming. Or nothing at all.

BY JON BRODKIN

Despite consistent pressure from acquisition-happy Oracle, leadership at BEA Systems is standing firm against the software giant. After Oracle threatened to pull its $6.7 billion offer for BEA off the table, BEA didn't cave: It demanded more money.

What happens next may be anyone's guess. "There's information the public knows, and there's information really known" only by each company's board of directors, notes Ari Kaplan, president of the Independent Oracle Users Group (IOUG).

Oracle offered to purchase BEA for $17 per share on Oct. 9 and was promptly rebuffed. In the pursuer's latest move, Oracle president Charles Phillips sent a letter to BEA's board demanding that BEA let shareholders vote on an acquisition agreement. In response, BEA on Oct. 25 proposed a purchase amount of $21 per share, inviting "third parties including Oracle" to bid at that price. Oracle already has rejected the $21 price as "impossibly high" and said it refuses to budge from the $17-per-share offer.

That could be just the beginning of a long, drawn-out process, even though both companies have said they want to avoid a lengthy ordeal.

Instead of rejecting outright any attempt at an acquisition, BEA clearly is open to being acquired if it gets the right price. "BEA's Board has not indicated that it would be opposed to a transaction that appropriately reflects BEA's value, reached through a reasonable process," BEA's William Klein, vice president of business planning and development, wrote in an Oct. 23 letter to Oracle President Charles Phillips, hours after Oracle threatened to take its offer out of play. "If Oracle is genuinely interested in acquiring BEA, you are fully capable of proposing a reasonable price to the BEA Board or taking any offer you wish directly to BEA shareholders."

If BEA has a poison-pill provision in its bylaws, that would prevent an acquisition without agreement from the board of directors, says Brad Shimmin, principal analyst for application infrastructure at Current Analysis. If that is the case, Oracle could go to court "to have [the poison pill] removed and swoop in and do a hostile takeover," he says.

"I don't think [Oracle is] threatening to pull the bid, so much as they are stating that they believe it's a fair bid and they hope BEA reconsiders," Shimmin said before BEA's $21-per-share proposal. "I don't think it's really a question of showmanship for the money. I think if BEA does not reconsider ... then Oracle very likely could start a legal process to make the acquisition go through."

Oracle and BEA: a hostile takeover?

Oracle needed 18 months to complete a hostile takeover of PeopleSoft, purchasing the rival vendor for $10.3 billion in December 2004. The early days of Oracle's bid for BEA Systems do not seem promising if Oracle wants a friendly takeover. Here's a look at what's happened so far.

Oct. 9: Oracle offers to buy BEA for $17 per share, the equivalent of $6.7 billion.

Oct. 11: BEA letter rejects offer, saying "BEA is worth substantially more to Oracle."

Oct. 12: A day after being rejected, Oracle goes public, issuing press release detailing its offer for BEA and hopes for a "friendly transaction."

Oct. 22: BEA rejects Oracle offer for a second time.

Oct. 23: Oracle letter to BEA demands shareholder vote on an acquisition agreement within five days, saying no other company has offered a better deal.

Oct. 23: (later in the day): BEA says its board is unanimously opposed to Oracle's offer, but says it would be open to selling for a "reasonable price."

Oct. 25: BEA takes the initiative, saying it will consider selling to "third parties including Oracle" at a price of $21 per share.

Oct. 25: (later in the day): Oracle calls BEA's proposal "impossibly high" and says it won't raise its offer of $17 per share.

Shimmin is not expecting a bidding war between Oracle and other potential buyers, "because other vendors who were possibilities have all denied any interest in [buying BEA]," he says.

SAP, for example, will not try to purchase BEA because there is too much overlap in the companies' technology, CEO Henning Kagermann reportedly has said.

At BEA rival JBoss, a middleware vendor owned by Red Hat, general manager Sacha Labourey predicted that BEA will give in to pressure from investors and sell to Oracle.

BEA's product lines include AquaLogic, software to help develop and manage service-oriented architecture (SOA) components, and other products to integrate, secure and govern the services deployed in an SOA. BEA also makes the WebLogic platform, a set of products including an application server and portal that supports Web 2.0 technologies with rich user interfaces and mashups.

Deal could benefit BEA customers

An Oracle-BEA deal probably would benefit BEA customers, and would be great for Oracle, giving the vendor a huge advantage over SAP in SOA-based applications, Shimmin says.

If you don't hear anything within the next couple of weeks, however, this deal might not happen at all, says James Kobielus, principal analyst for data management at Current Analysis. "If anything's going to happen, it's going to have to happen in the next week or two," he says. "If there's not a counterbid or a new bid from Oracle in the next couple of weeks, don't expect anything after that."

Many Oracle customers also use products from BEA, which, because of WebLogic, is the "worldwide leader in Java-based application servers," according to the IOUG's Kaplan.

Oracle has done a good job continuing to support products from companies it has acquired, but the effect of any acquisition on customers is always an unknown, Kaplan says. "Oracle has done cooperative takeovers. Oracle has done hostile takeovers, PeopleSoft is a good example," he says. "In the end, what we're concerned about is on the customer side: Is the technology a value to customers? Is any of the technology going to be thrown out, or [no longer supported]?"

Oracle hasn't let its ambition to purchase BEA prevent it from making other acquisitions. Oracle announced Wednesday it has agreed to buy Interlace Systems, which makes strategic operational planning software. Interlace would be Oracle's 10th acquisition of 2007.

An Oracle-BEA deal would be practically a match made in heaven, argues David O'Connell, a senior analyst at Nucleus Research. BEA has the technology to integrate a lot of the applications Oracle sells, and Oracle's offer of $6.7 billion seems to be a fair one, he says. "If Oracle uses BEA well, it can have a more seamlessly integrated product offering than its rivals, and that would be a significant competitive advantage," he says. ■

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Start-ups get VC cash infusion

Femtocells, wireless LANs and archiving among focus areas

BY CARA GARRETSON

You probably haven't heard of most of these seven companies — yet.

Amid the $2.7 billion invested by venture capitalists in 372 private companies targeting enterprise IT customers during the third quarter, a handful of start-ups stand out as particularly promising. Venture capitalists, always on the look out for the next big thing, are pouring money into these companies in the hope that their technologies soon will become staples of corporate networks.

A special slice done for *Network World* (see complete results at www.nwdocfinder.com/2250) of the MoneyTree Report, compiled by PricewaterhouseCoopers and the National Venture Capital Association based on data from Thomson Financial, shows that third-quarter investments in network-related companies are down slightly from the $2.9 billion invested in the second quarter, and have been hovering in the same range for the past few years (see graphic). The report defines network-related companies as those from market segments including security, wireless, telecommunications, the Internet and software.

With newer investment categories, such as reusable energy, and flashier ones, such as consumer electronics, taking up investors' attention, start-ups aiming at the mature, enterprise IT market need to come up with truly innovative technology to stand out. And with the IPO market for technology companies still just a shadow of its former, Internet-boom self, these companies also need strong hopes for profitability.

"Enterprise is not the easy place it used to be" for returns on investments, says Pascal Luck, managing director of Core Capital in Washington, D.C. "But as with any space, innovative technology is always interesting, and always a good investment."

Highlighted here are seven companies that received more than $20 million in funding during the third quarter. They haven't gotten much attention, but are aiming to bring innovation — directly or indirectly — to enterprises.

With a fresh $20 million behind it from Kleiner Perkins Caufield & Byers, Lightspeed Venture Partners, and Northern Light Venture Capital, **Aerohive Networks** is aiming to make wireless LANs (WLAN) simpler and less expensive. The company, founded in 2006, launched its HiveAP product line in May. This architecture eliminates the WLAN controller, instead pushing network control and data forwarding to WLAN access points at the edge of the network, the company says. Aerohive's products also are optimized for voice-over-WLAN applications, it says.

Atempo, which makes data-protection and archiving software, plans to put the $22 million it received from Intel Capital, Ridgewood Capital Management and Steelpoint Capital Partners to work expanding its product line and global presence, company officials say.

Going up against such storage giants as EMC and Network Appliance, Atempo's software for Windows, Linux and Unix servers is based on a data-management framework that automatically adjusts to a specified level of data protection and security.

Azul Systems could be called the company that almost wasn't. Last month a $41 million bailout came the way of the server appliance maker with investments from Accel Partners, Austin Ventures, ComVentures, Redpoint Ventures and Worldview Technology Partners. The company, which was founded by former Sun executives, in June settled a patent-infringement lawsuit brought by the computing giant. Just before these venture capitalists' checks were cashed, Azul was laying off employees and rumored to be looking for a buyer; now the company intends to use the money to further plans for its network-attached processing products it sells to large enterprises running Java applications. The company's appliance pools server processing power for Java-based, transaction-intensive applications to maximize their performance. According to IDC, sales of enterprise servers to power Java applications reached $11.2 billion in 2005.

Novarra, which received $34 million from Colorado Investment Securities, Fort Washington Capital Partners Group, JK&B Capital, Kettle Partners and Qualcomm Ventures, makes a Web browser for mobile phones that reformats Web sites designed for PC screens only. Users of the technology are mobile operators, handset makers and Web content providers, but enterprises would also benefit from providing mobile workers better access to more sites. The six-year-old company has struck deals with Vodafone, Palm, U.S. Cellular and Yahoo. In addition to the browser, Novarra offers the Novarra Engines for Wireless Data Product Suite, which gives companies client and server offerings that can be placed behind a corporate or carrier firewall to extend applications to mobile devices securely.

Plato Networks, which received $20 million in funding from Crosslink Capital, Granite Ventures and STIC Investments, is a fabless semiconductor company that says its communications integrated circuits will bring energy efficiency to the data center. The three-year-old company, still operating in stealth mode, will use the new cash to speed up development of its ultra-low-power 10Gbps Ethernet products. By combining analog techniques with digital-signal processing, the company's offerings will help enterprises save on power required by data-center equipment, officials say.

Tatara Systems received $29 million from Highland Capital Partners, North Bridge Venture Partners and undisclosed individuals to continue work on its femtocells, or indoor base stations for wireless communications. The technology is designed to improve in-home and small-office mobile coverage, letting carriers provide enhanced IP services for mobile phone customers, officials say. Femtocells connect to a service provider's network via broadband connections to extend service coverage indoors, and route mobile phone traffic through an IP network. The six-year-old company lists NEC and Bell Mobility among its customers.

Apparently Greylock Partners agrees with our nomination earlier this year of **Workday** as one of 10 enterprise software companies to watch; the venerable venture capital firm alone invested $20 million in the company in the third quarter. Two-year-old Workday provides a suite of ERP services, including human capital, revenue, resource and financial management. The company was co-founded by PeopleSoft founder Dave Duffield and is pitting its service model against ERP giants SAP and Oracle. It names Salesforce.com, Kana Software, Covad Communications and RightNow Technologies among its customers. ■

Network deals stagnant

After hitting a high of 4,589 deals totaling $68 billion in 2000, investments in network-related companies targeting the enterprise have languished:

Year	Number of deals	Dollars invested
2001	2,578	$26 billion
2002	1,784	$13 billion
2003	1,634	$11 billion
2004	1,654	$12 billion
2005	1,614	$11 billion
2006	1,678	$11 billion
2007 (to date)	1,198	$8 billion

Source: MoneyTree Report, compiled by PricewaterhouseCoopers and the National Venture Capital Association based on data from Thomson Financial. The report defines networking-related companies as those from market segments including security, wireless, telecommunications, the Internet and software.

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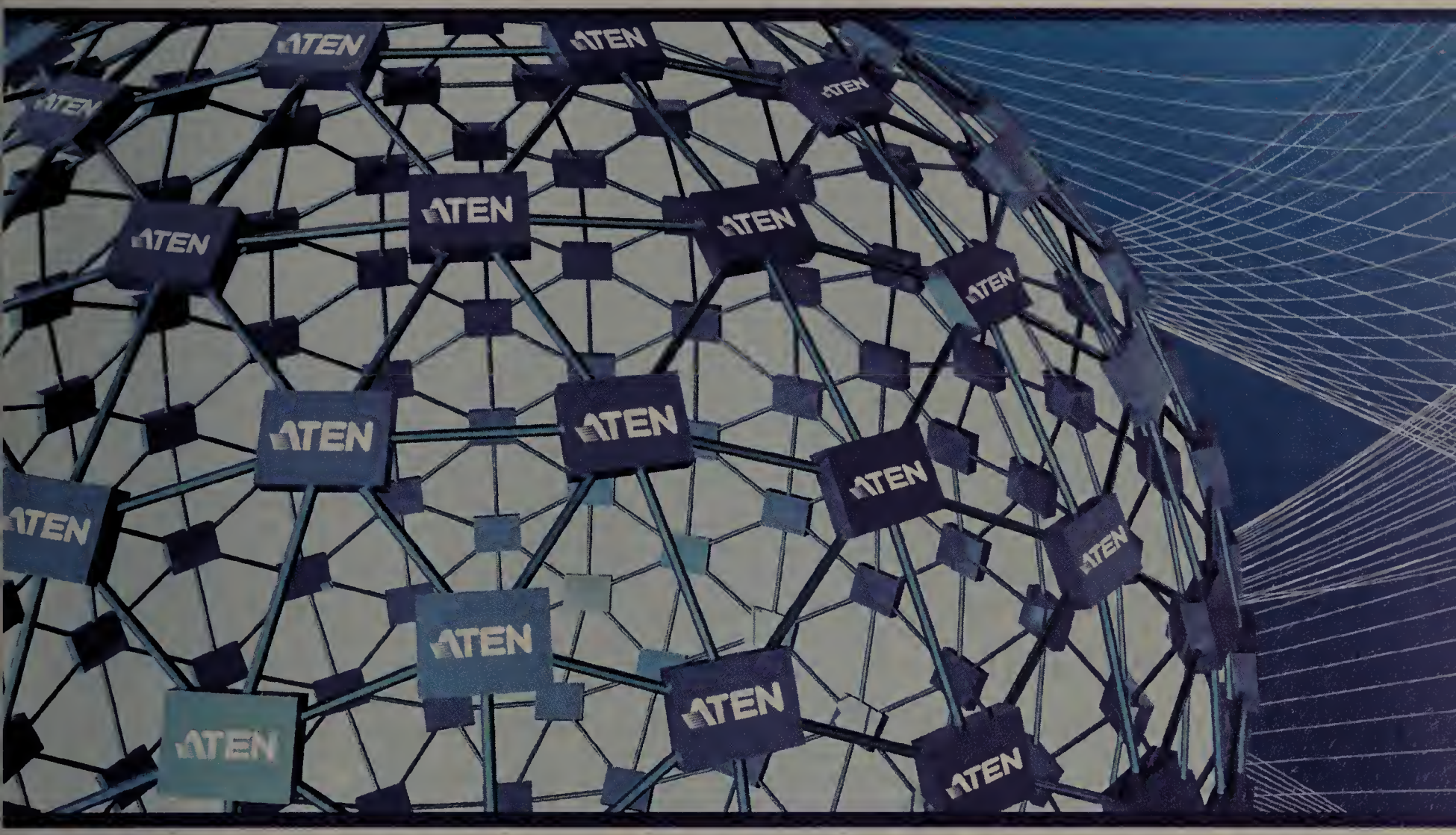

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Internet on the road: good where inexpensive

NET INSIDER
Scott Bradner

A trip I took last week to New Mexico for a conference and a few days of driving-around vacation reinforced my assumptions about the craziness of the Wi-Fi business these days: The fancier the hotel, the more expensive and the poorer the quality of Internet service.

I stayed at three different hotels during this trip — a Hyatt Regency, a Comfort Inn and a Courtyard by Marriott — and I flew through three airports. By far the highest-speed and easiest-to-use Internet service was found in the Comfort Inn. All I had to do was select the access-point Service Set Identifier and go. No agreements to click through or forms to fill out.

The service was "free" — that is, included in the very inexpensive rate for the Spartan but fully adequate room.

Internet service at the Albuquerque airport was almost as easy — also free but requiring a click-through agreement to be a good Internet user.

The cost of the Internet service at the Courtyard by Marriott also was built into the quite inexpensive room rate. The service was not as easy to use as that at the Comfort Inn or the Albuquerque airport. It was wired rather than wireless, but they provided the cable, so that was not a problem. But they wanted me to give them my name and e-mail address, as well as to agree not to abuse the service.

Denver's airport had fee-based wireless service through AT&T — the standard sort of thing where I provided credit card information and accepted their use agreement, and AT&T charged my Amex card $7.95 for 24 hours of use, even though I was going to be there less than two hours.

That leaves the Hyatt Regency. This is *not* a case of leaving the best until last.

No free Internet service here in spite of a room rate that was more per day than that of the other two hotels combined. The room was far from Spartan, but there were few useful differences between the Hyatt and Courtyard by Marriott rooms other than square feet of floor space — quite a bit of which was taken up by a bed bigger than the kitchen in my first apartment and covered by enough pillows for a baseball team.

The Hyatt offered wireless Internet service from T-Mobile. I had to pick up scratch cards from the hotel check-in desk that were good for a day and which dutifully were put on my bill for the conference-special price of about $5 each (I've seen prices as high as $21 in other "good" hotels).

As far as I can tell, T-Mobile does not have anyone on staff that understands user interfaces. There were eight to 10 things I had to fill in just to get going, including my name and contact information even though I was using a prepaid card. After all of that, I got an account setup and had to log on to the account — why I couldn't just start using the account, I do not know.

On top of all the steps, Firefox reported that the account name and password were sent unencrypted on the wireless network — not exactly a security feature. The worst feature of the service was that there seemed to be no way to extend an account with a new scratch card — there was a button that promised to do that, but all the button did was show me a screen that said what I wanted to do was incompatible with the account I had. Thus, I had to create a new account every day with a different logon name because the one I had was now in use. In addition, the service was quite a bit slower than at the Comfort Inn.

Why is it that the fancier the hotel, the more they want to ding you for so many things after charging you an exorbitant room rate? Safe to say that I only stay at these places when someone else is paying and I have to because it's the conference hotel. I'd rather stay in a place that is more on a human scale and I know upfront what it will cost.

Disclaimer: Harvard University rarely stays in hotels, so the above observation is mine alone.

Bradner is Harvard University's chief security officer. He can be reached at sob@sobco.com.

Divided, we fall

RISK & REWARD
Andreas Antonopoulos

I've always believed in the importance of maintaining a well-designed emergency response capability. For many years I helped organize security operations centers, computer emergency response teams and incident response teams. No company is ever 100% secure. Breaches happen and will continue to happen. Secure companies are the ones that are able to efficiently and effectively mitigate the damage from a security incident. Looking back, I would probably do things a bit differently now. A key difference would be the balance between company privacy and involvement of law enforcement.

The response plan has to include a policy on the involvement of law enforcement, both whether law enforcement is involved and when they are notified. Today, it seems that most companies choose to "handle things quietly" to avoid reputation damage. Thus law enforcement is most often not notified.

Numerous statistics back this assertion, but the most telling is the effect of SB1386, the "sunshine law." Ever since the passage of SB1386 required companies to notify victims of identity theft, there has been a deluge of reports of stolen laptops and lost backup tapes. It's not as if these things didn't happen before, only that the reporting rate was probably lower than 1%. If that's the case in identity theft, you can bet that disclosure rates on cybercrime not covered by SB1386 remain abysmally low.

It's time that companies revisit the policy of nondisclosure. It's feeding a cybercrime beast that is getting increasingly larger. Not only is cybercrime lucrative, but compared with any other kind of crime it is quite low risk, partly because companies don't pursue prosecutions.

There are many reasons why a company would choose to keep things quiet:

- Concern about negative publicity.
- Fear of retaliation.
- Low expectation of prosecution (especially with attacks from other countries).
- Concern about intellectual property leaking in a court case.

These are all valid reasons, but they tend to emphasize short-term benefits over longer-term damage. Reputation risk is becoming less of an issue. In a way the deluge of publicized breaches makes it obvious to consumers that no company is immune or 100% secure. In most cases the damage to stock prices is only temporary. Law enforcement agencies are getting much better at protecting the victims from being revictimized through the legal process. The Department of Justice has published best practices to protect companies that report cybercrime hoping to improve reporting rates.

But the bottom line is simple: The damage caused by nonreporting is long term and devastating. Infinite tolerance (the current policy of nonreporting) leads to low risk for cybercriminals. When companies hide crime, they harm themselves indirectly: burdensome regulations, popular backlash, criminal impunity, glamorization of cybercrime. The identify theft market grew more than 60% last year, and that's just the tip of the iceberg that SB1386 reveals.

To beat cybercrime we have to report it. Get to know your local U.S. attorneys and FBI agents and build a relationship today — before you become a victim. Then stand united.

Antonopoulos is senior vice president and founding partner at Nermetes Research, a technology research firm. He can be reached at andreas@nermetes.com.

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Soft hardware: the joys of virtual appliances

TOLLY ON TECHNOLOGY
Kevin Tolly

For all of my more than 25 years in IT, the "software vs. hardware" debate has raged on. During that time, their benefits were mutually exclusive. In many instances, software gave us total flexibility, but hardware gave us reliability and performance. As with most things in life, there were trade-offs. Now, though, it appears that virtualization is coming to the rescue — again — with the concept of virtual appliances. Perhaps you can have it all, after all.

At least in theory, a virtual appliance gives you the flexibility of a software-based approach, as well as the plug-and-play benefits usually associated with stand-alone appliances. I can't decide if this is "hard software" or "soft hardware," but a virtual appliance brings many of the benefits of both.

First and foremost, the appliance — and by extension the virtual appliance — leaves component integration up to the vendor. For example, if the service being deployed stores log information in a relational database such as MySQL, the base operating system and that component are loaded and tested by the vendor.

That might sound simple but typically it is not. For starters, given the modular approach that vendors take in building systems (and this is the way it should be done), it is quite common for many building blocks to be required to build a finished system. If you take the software route, the user is responsible for loading all of the prerequisite building blocks. That can be quite time-consuming and rife with possible errors should the components not be loaded in the proper order. When you take the virtual appliance route, those environmental responsibilities become someone else's concern.

If you take the traditional hardware route, you generally are stuck with whatever base platform you purchased. It isn't often that vendors will swap out old appliances for new ones at no or minimal charge. Given that most appliances are meant to be "black box" devices — not to be tinkered with by the buyer — it's also not usual or customary to offer extensive in-place hardware upgrades of key components, such as CPU or RAM. Thus, the platform ultimately can become your greatest limitation. The vendor might get to a point where the software and firmware upgrades that provide new functions can't run on the platform that you purchased. Then, your only option might be a forklift upgrade.

Once again, a virtual appliance does away with these particular limitations and concerns. Because the hardware is virtual, the vendor can provide you with a new, fully integrated machine as a downloadable image you can boot and run. Because other potential constraints — CPU, disk, RAM — are virtual as well, your appliance can get instant benefits from any hardware upgrades to the physical machine. And again, because each appliance is virtual, one physical system can run multiple virtual appliances.

Any drawbacks? Well, I'm always concerned about performance. For in-line appliances, such as intrusion-prevention devices or firewalls, dedicated hardware always has been the best way to assure high throughput and minimal latency.

In the past, many of these appliances had specially designed hardware that would accelerate particular functions, for example, deep packet inspection.

Today, however, we are seeing multiple, multicore CPU systems taking on many of the jobs done in the past by dedicated hardware. In addition, new-generation systems take a hypervisor approach to communicate directly with underlying hardware. Still, there is nothing like actual numbers to put performance concerns to rest.

Tolly is president and CEO of the Tolly Group. He can be reached at ktolly@tolly.com.

Social networks and the wisdom of crowds

EYE ON THE CARRIERS
Johna Till Johnson

There's a lot of buzz lately about the concept of social networking. You've got to admit the phrase is pretty silly. First off, it's redundant: Networks, by definition, are already social — they connect humans. Plus, what's the opposite — "antisocial networking"? Going online to tell everyone how much you hate them?

But despite the silly name, the basic concept is pretty exciting. It refers to the fact that networking technology is leading to all kinds of new and interesting ways for humans to interact. One of those is crowdsourcing — the notion that people in the aggregate can provide more accurate information than individual experts.

The reasoning is that crowds can be self-correcting. If a large number of people are able to correct one another's errors — whether made out of ignorance or bias — the results will be overall more reliable than the output of any individual (or small group). The canonical example is Wikipedia, which is by pretty much any measure at least as accurate as a traditional encyclopedia, and considerably more timely. Another example is the reader reviews on Amazon.com.

But we need to be aware of the limits of the wisdom of crowds. I'm reminded of the wonderful Robert Heinlein quote: "Democracy is based on the assumption that a million men are wiser than one man. How's that again? ... Autocracy is based on the assumption that one man is wiser than a million men. Let's play that over again, too."

Replace "democracy" with "crowdsourcing" and "autocracy" with "individual expertise", and you see the problem precisely. OK, I'm just a tad biased. My livelihood depends on my perceived expertise (however real or not), so I'm naturally a bit reluctant to imagine that I could be replaced by an anonymous crowd.

But there's a bigger reason I'm skeptical of crowdsourcing. It's another social networking phenomenon called information cascading. Cascading refers to the demonstrated fact people often change their opinions based on those of others — without having any better data.

Researchers Duncan Watts, Matthew Salganik and Peter Dodds demonstrated this phenomenon in a study published last year in the journal *Science*. More than 14,000 participants registered at the Web site Music Lab (www.musiclab.columbia.edu) and were asked to listen to, rate and, if they chose, download songs by bands they had never heard of. Some participants saw only the names of bands and songs; others also saw how many times the songs had been previously downloaded.

The upshot? Bands that had been rated highly by previous participants were more likely to be rated highly by subsequent ones. As the researchers reported, "The impact of a listener's own reactions is easily overwhelmed by his or her reactions to others."

Crowds, in other words, aren't quite as self-correcting as we'd like to believe. Once again, Heinlein put it well: "Wisdom is not additive; its maximum is that of the wisest man in a given group."

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

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The evolution of antivirus software

BY CHIRANTAN DESAI

Reports about the death of traditional signature-based antivirus software are premature. As the threat landscape evolves, so too must antivirus software to provide both signature- and behavioral-based protection. Effective endpoint security must also incorporate technologies such as endpoint firewall, host intrusion prevention and network access control.

Until recently, attackers were in it for the fame and notoriety of hacking a corporate network. Financial gain was rarely the motivation. This has changed, and corporate networks have never been at so much risk. Attacks are increasingly silent and insidious, targeting sensitive and confidential business data.

Twice a year Symantec releases its Internet Security Threat Report (ISTR), a vendor- and product-neutral examination of the current Internet threat environment. ISTR Vol. XII, released in September 2007, covers the period from Jan. 1 to June 30, 2007. It shows a dramatic increase in instances of data theft, data leakage and the creation of targeted, malicious code for the purpose of stealing confidential information for financial gain.

As attackers have become increasingly financially motivated, they have optimized the capabilities of a broad spectrum of attack methods. MPack is a notable example that emerged in the first half of 2007. This commercially available black-market attack tool kit incorporates malicious code, spam and exploits for Web browser vulnerabilities. It can launch exploits for browser and client-side vulnerabilities against users who visit a malicious or compromised Web site.

Multistaged attacks often incorporate an initial Trojan that downloads a back door, which in turn can allow the attacker to set up a phishing Web site. This suggests that exploit code developers, malicious code authors, spammers and phishers may be collaborating for mutual gains. It also indicates that a new type of attacker has emerged who is versed in all types of attacks and is extremely flexible in his methodology and motives.

The multistage methods have led some analysts to question the value of traditional signature-based antivirus software. Yankee Group Analyst Andrew Jaquith in December 2006 published a paper, "AntiVirus is Dead: Long Live Anti-Malware," saying his objective was to "bust everybody's bubble that (signature-based antivirus) is keeping people safe and the notion it will solve your malware problems."

Jaquith is not alone in proclaiming that antivirus signatures are no longer effective and companies should be implementing behavioral-based technologies. This reasoning, while not completely wrong, is misguided. It is correct that proactive behavior-based technologies offer the best protection against zero-day attacks and other threats based on characteristics, not signatures. The number and frequency of those attacks are on the rise. However, signatures remain the most effective tool for the accurate detection and remediation of the thousands of existing known threats that are still prevalent on the Internet.

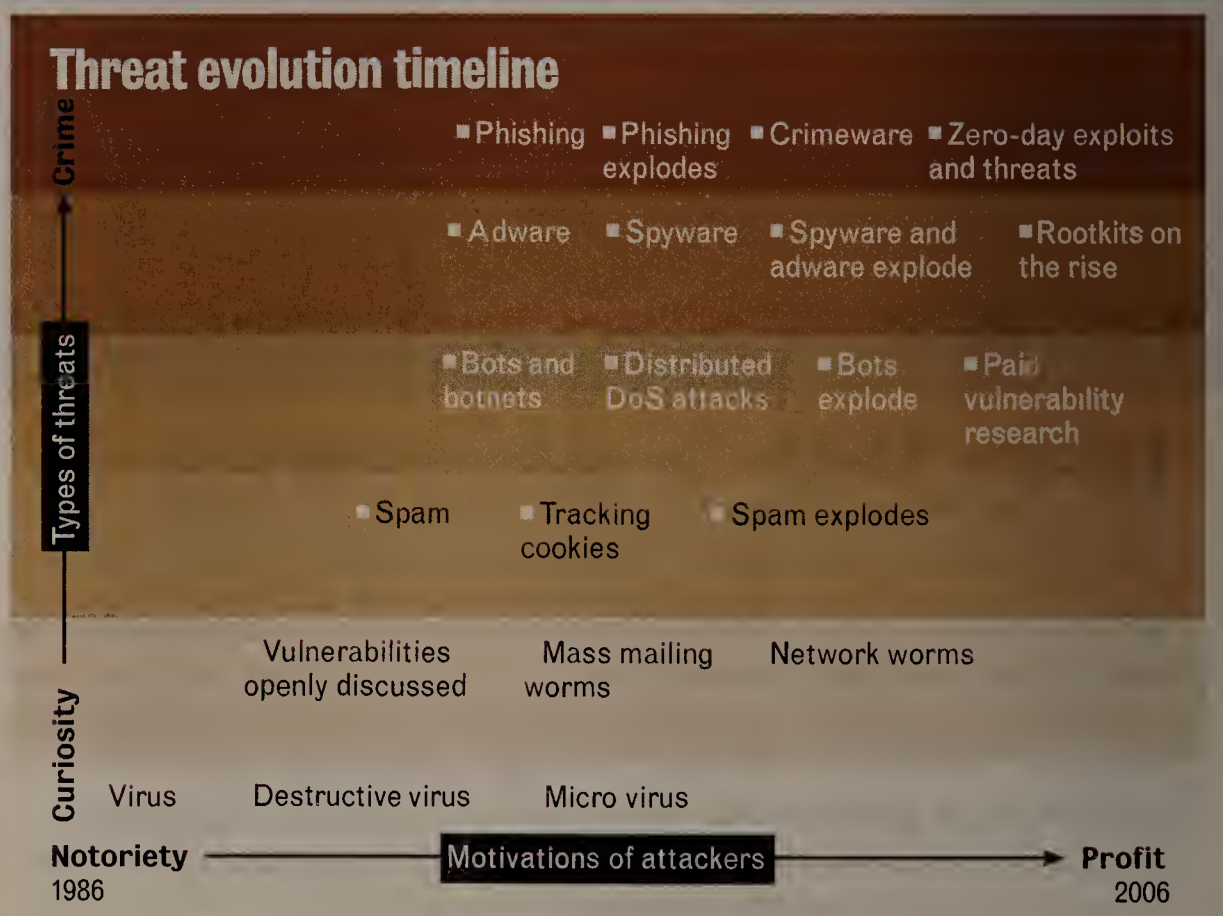
Security systems and policies must evolve to take a more proactive approach to combating threats by leveraging both signature- and behavioral-based technologies to ensure a safe and connected environment.

After all, employees are increasingly mobile, needing access to the network from laptops or smart phones while they're at home, on the road or at a local coffeehouse. Customers, contractors and partners require regular and easy access to at least parts of a company's data stores.

Therefore, an effective endpoint security system requires more than antivirus. A more holistic approach will require adopting additional security technologies such as firewalls, host intrusion prevention, data loss prevention, mobile device protection and NAC.

Although Internet security threats are becoming more silent and deadly, signature-based antivirus technology continues to play a critical role in fighting known threats. A layered security system that merges signature- and behavior-based antivirus technologies with other security tools will enable companies to provide authorized personnel access to their corporate networks while keeping external and internal threats at bay.

Desai is senior director of Product Management at Symantec.



Got great ideas?

Network World is looking for great ideas for future Tech Updates. If you've got one, and want to contribute it to a future issue, contact Editor in Chief **John Dix (jdix@nww.com)**

TOLLY Benchmarks

Volume 6, Issue 4

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Open Services Networking enables applications to run inside the network infrastructure

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Throughput scales from 10 Mbps to 10 Gbps while handling a serious load of security threats

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ProSafe GS748TS and GS724TS stackable smart switches deliver wire-speed performance for all frame sizes tested

THE TOLLY GROUP

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Study finds 3Com's OSN delivers an innovative new approach to building networks

Sponsor: 3Com Corporation
Document number: 207186
Product class: Network applications platform
Products under test:
3Com Open Services Networking (OSN)
Testing window: January 2007
For more info on this test, visit:
http://www.tolly.com

An in-depth Tolly Group examination of 3Com Corp.'s Open Services Networking (OSN) revealed that the solution enables enterprises, service providers and systems integrators to deliver innovative, flexible solutions; develop and deploy services faster; simplify network management; and achieve lasting investment protection.

OSN is a communications infrastructure that enables applications to run inside the network and address a range of issues that confront CIOs and network designers. OSN makes it possible for 3Com router and switching platforms to run a variety of open source and best-of-breed commercial applications to enable a range of network services.

Tests demonstrated OSN's ability to support best-of-breed applications or open source-based applications on the hardware, giving users a critical choice in how they wish to deploy their application base and manage software costs. Moreover, tests showed that the OSN module itself is based on a recent, up-to-date, secure Linux operating system, that it is ready to host mission-critical applications such as voice over IP (VoIP) and that it supports standard IP when interfacing with its host router.

OSN saves on capital expenses by eliminating the need for additional appliances and reducing power consumption. From an operational expense viewpoint, OSN enables remote deployment and management of applications, eliminating on-site technical support.

3Com also has focused OSN on serviceability and control to reduce the cost and complexity of servicing network applications. This was evident by the tight integration between the module and the router or switch platform, enabling administrators to control applications as needed.

Additionally, tests show that 3Com has created OSN with security in mind, ensuring the applications hosted on an OSN platform are protected behind multiple hardware and software components. Testing validated this when access control lists (ACLs), network address translation (NAT) and firewall connections were tested.

Testing also demonstrated that OSN is capable of running enhanced applications that required advanced disk, traffic and CPU resources. Additionally, testing proved that OSN is easy to use and to deploy. Simply mounting the OSN software and bringing up the OSN modules on a 3Com router required a matter of just a few minutes. And testing also demonstrated that OSN "auto-interfaces" with its host router and 3Com has furnished simplified administration via a Webmin Open Source Web portal interface.

Finally, tests demonstrated that OSN modules inside the router or switch deliver near wire-speed performance, even when transmitting data to clients behind firewall connections.

Average Throughput of 3Com OSN Module to Switch-Attached Laptop Across Fast Ethernet

(TCP Stream Test with Mixed Packet Sizes)

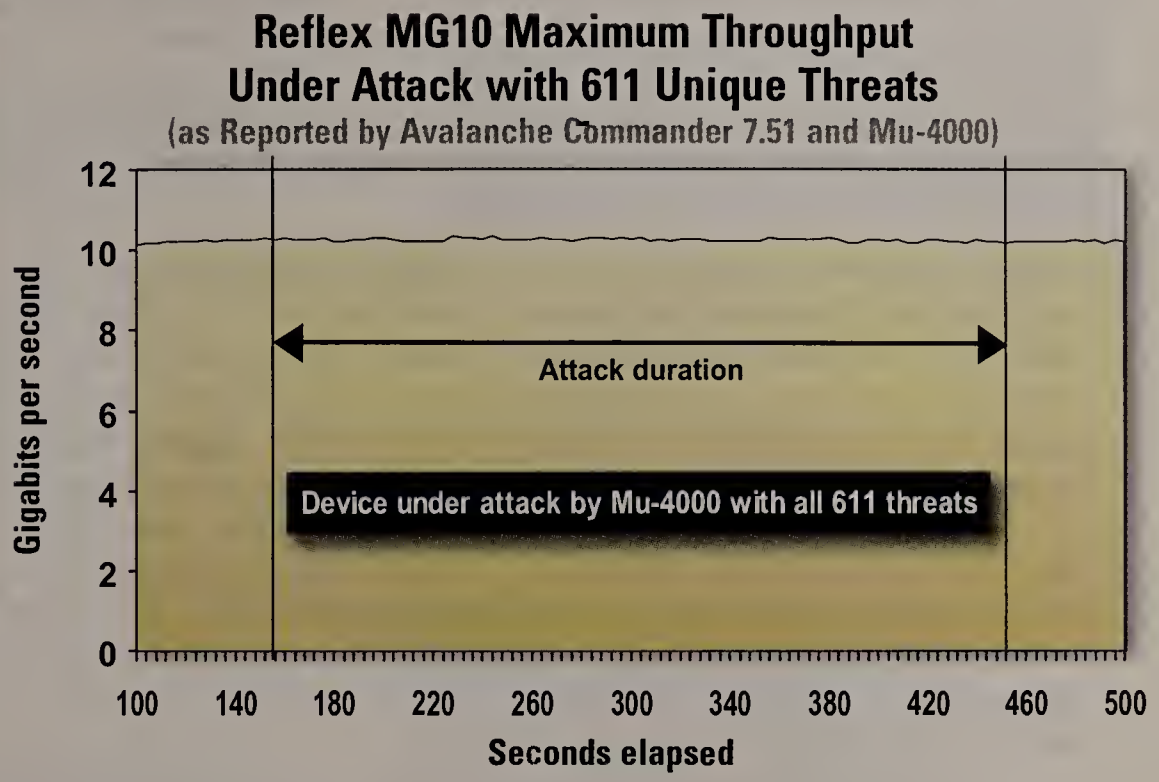
Duration	Avg. Throughput (Mbps)	Bytes Transmitted (MB)
10 seconds	94.15	123.4
30 seconds	94.13	370.2
5 minutes	94.12	3700

- Achieves near wire-speed performance over Fast Ethernet connections
- Delivers the flexibility for management to deploy best-of-breed or open source applications, or mix and match to curb costs
- Fosters secure applications by enabling administrators to specify rules for NAT and firewall operations
- Supports multiple monitoring applications, and interoperability with SNMP-enabled products so users can deploy multiple types of service monitoring, tailored to a specific business need

View the full report at:
http://www.tolly.com/DocDetail.aspx?DocNumber=207186

Reflex MG10 Network Security Switch repels severe attacks, maintains traffic performance

- Maintains average maximum throughput of 10.25 Gbps even when device is processing 611 unique threats — the maximum attacks supported by the Mu-4000 Security Analyzer with Version 2.3.28 attack library
- Blocks 611 security threats out of 611 generated
- Sustains throughput, with zero failed transactions, during random blade failure
- Supports almost 5.8 million steady-state TCP connections over two 10GbE and eight GbE ports



Tests show that a network security switch from Reflex Security can successfully thwart a heavy barrage of attack traffic while simultaneously processing normal application traffic without sacrificing performance.

Reflex Security, Inc. commissioned The Tolly Group to examine the performance of the Reflex MG10, a network switch that employs a blade-based Distributed Security Architecture™ (DSA) that provides scalable throughput from 10 Mbps to 10 Gigabits per second (Gbps). The aim was to understand how the MG10 can handle normal application traffic while also handling a serious load of security threats.

Engineers also measured the number of open TCP connections sustained across the MG10, and examined how the unit responds during an invoked failure.

Throughput tests show that the MG10 delivers 10.25 Gbps of throughput while its deep packet inspection detected and prevented the complete library of attacks generated by a Mu Security Mu-4000 Security Analyzer. The Reflex MG10 also delivered uninterrupted performance and zero transaction loss during simulated failures of Reflex MG chassis security blades. In fact, engineers, simulated a failure by pulling a system blade for 60 seconds. This represented a serious hardware failure on the device. However, the MG10 continued to deliver 6.3 Gbps of throughput even with the loss of a single blade. Engineers noted that the reinsertion of the MG10 blade did not result in the loss of any transactions.

Engineers measured the ability of the MG10 to perform a SYN-SYN ACK process to open a connection with another device and then maintain that open TCP connection. Tests of TCP connections shows that the security switch can sustain 5.8 million open TCP connections over the device backplane.

View the full white paper at:
http://www.tolly.com/DocDetail.aspx?DocNumber=207219

Sponsor: **Reflex Technology, Inc.**
Document number: **207219**
Product class: **Network security switch**
Product under test:

- Reflex MG10 supporting Reflex MG V 6.1 threat signature and Reflex Command Center V 6.1 management software

Testing window: **June 2007**
For more info on this test, visit: ***http://www.reflexsecurity.com***

- Accurately identifies all traffic types tested from a stream of 1.6 Gbps of aggregate throughput across the device backplane
- **Maintains at least 1.6 Gbps of throughput and 100% detection accuracy even as the number of rules scales from 0 to 20,000**
- Generates less than 1 millisecond of one-way average latency while performing Layer 7 Deep Flow Inspection (DFI) at the of 1.6 Gbps with 20,000 rules enabled
- **Deploys in just four basic steps into an existing network**

Tests reveal speed, accuracy and scalability of Procera Networks PacketLogic 7600 for broadband ISPs

Broadband Internet service providers (ISPs) intent on improving Quality of Service (QoS) and managing applications that hog bandwidth could benefit from the findings of a Tolly Group test on the Procera Networks PacketLogic 7600 traffic and service management system.

Tolly Group tests confirm that the Procera PacketLogic 7600 offers high accuracy in traffic identification, extremely low latency, ease of installation and the ability to scale to accommodate changing network traffic loads.

The PL7600 typically is deployed by broadband service providers to manage and control network and service usage and traffic, to provide tiered service levels and assure agreed-upon throughputs (SLAs), and to conform to the technical assistance requirements of lawful intercept regulations such as CALEA (Communications Assistance for Law Enforcement Act) in the U.S.

The Procera PacketLogic 7600's traffic identification capabilities, which allow service providers and others to manage applications such as BitTorrent and file sharing, achieved 100% accuracy in identifying all 50 traffic types tested, even as traffic scaled from 0.2 to 1.6 Gbps. Further, the PacketLogic 7600 generated less than 1 millisecond average latency across all throughput rates, with up to 20,000 traffic management rules enabled — proving the system's high performance and ability to easily scale without introducing undue latency and network delays. And finally, Tolly Group engineers affirmed the system's ease of use and installation by documenting the steps needed for initial deployment in an existing network.

On the scalability front, engineers verified that the PacketLogic 7600 does not degrade the throughput and latency performance up to 20,000 rules tested by sustaining 1.6 Gbps throughput and less than 1 ms of average latency. Maximum latency measurements did not exceed 3 ms.

From an ease-of-use perspective, Tolly Group engineers verified that just four basic steps are needed to deploy a PacketLogic 7600 appliance into an existing network. Since the PacketLogic 7600 runs transparent in the network at Layer 2, it starts gathering Layer 7 traffic information by being inserted into the existing network inline or as a tap. By default, the 7600 is equipped with 300+ signatures to identify common services used by applications. However, like typical users, Tolly Group engineers changed IP information, enabled the statistics, created new objects and associated the objects with rules/policies.

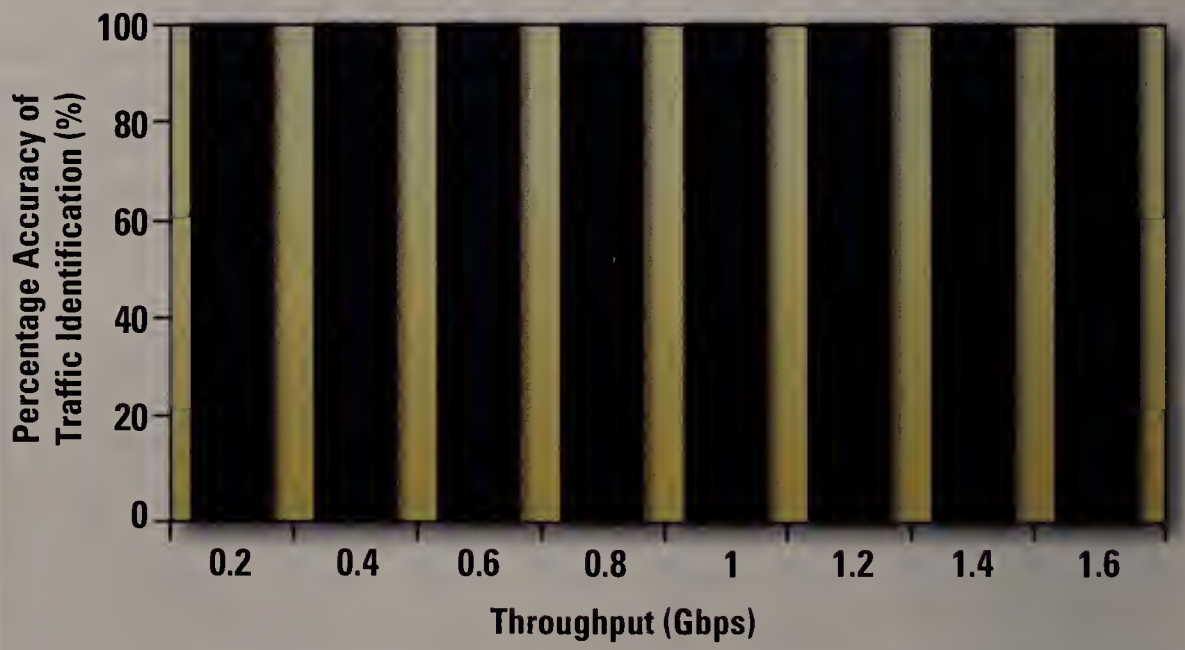
View the full report at:
http://www.tolly.com/DocDetail.aspx?DocNumber=207173

Sponsor: **Procera Networks, Inc.**
Document number: **207173**
Products under test:
- Procera Networks PacketLogic 7600 running protocol version 10 and build version 324

Testing window: **April 2007**
For more info on this test, visit:
- ***http://www.proceranetworks.com***

Traffic Identification Accuracy at Various Throughput Rates

(Simulation of 50 Well-Known Applications)



Note: Engineers used Shenick's "TCP Replay" feature to replay PCAP files which contained the behaviors of 50 well-known applications and generated up to 1.6 Gbps of stateful throughput. While the PacketLogic 7600 is rated at up to 2 Gbps of bidirectional throughput, the test tool used only generated up to 1.6 Gbps.

Nortel proves price/performance lead over Cisco and HP in Ethernet switch tests

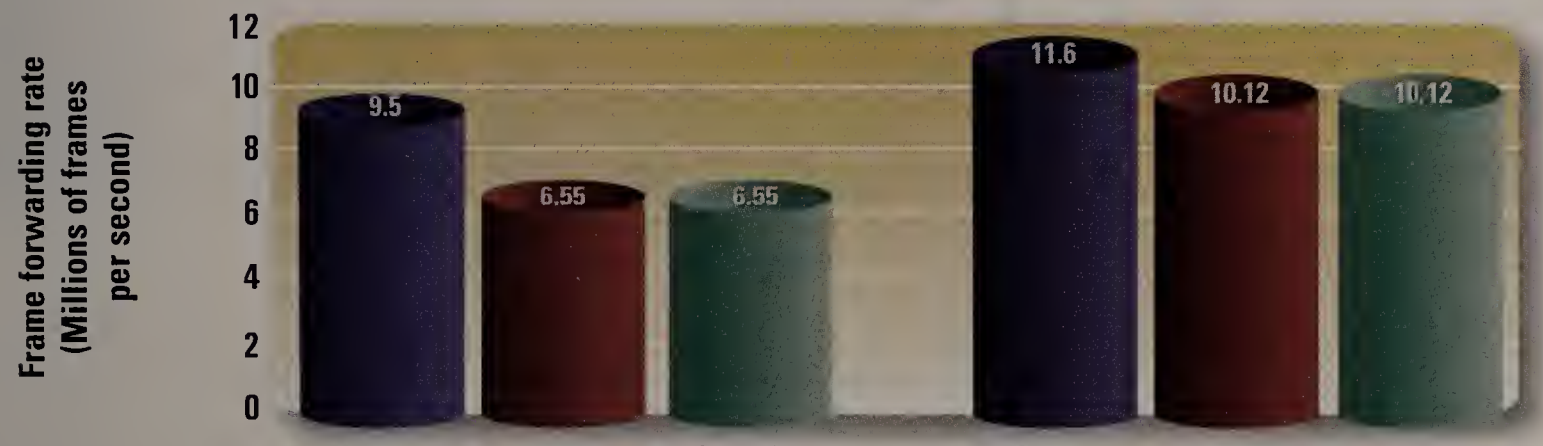
In two separate tests conducted for Nortel, the company's Ethernet Routing Switches exceeded the price perfomance of comparable switches from Cisco Systems and ProCurve Networking by HP.

A May 2007 test of Nortel's ERS 2526T and ERS 2550T shows that the Nortel switches delivered superior performance of up to 9.52 and 11.6 million frames per second for 64-byte frames, surpassing the Cisco Catalyst 2960-24T and 48T and ProCurve Networking 2626 and 2650. The Nortel switches also offered a lower cost-per-Gbps of throughput — $109/$153 for 24/48 ports, versus ProCurve at $143/$159 and Cisco at $567/$661.

A September 2007 Tolly Group report found that Nortel's ERS 4548GT-PWR achieved 48 Gbps of throughput vs 26 to 30 Gbps for Cisco Catalyst 3560-48PS and 3750-48PS switches tested. Again, Nortel offered the lowest cost-per-Gbps of throughput at $70, vs. $250 for the Catalyst 3750G-48PS and $153 for the Catalyst 3560-48PS.

Layer 2 Bidirectional Frame Forwarding Rate of Nortel ERS, Cisco Catalyst and HP ProCurve using 64-Byte Frames

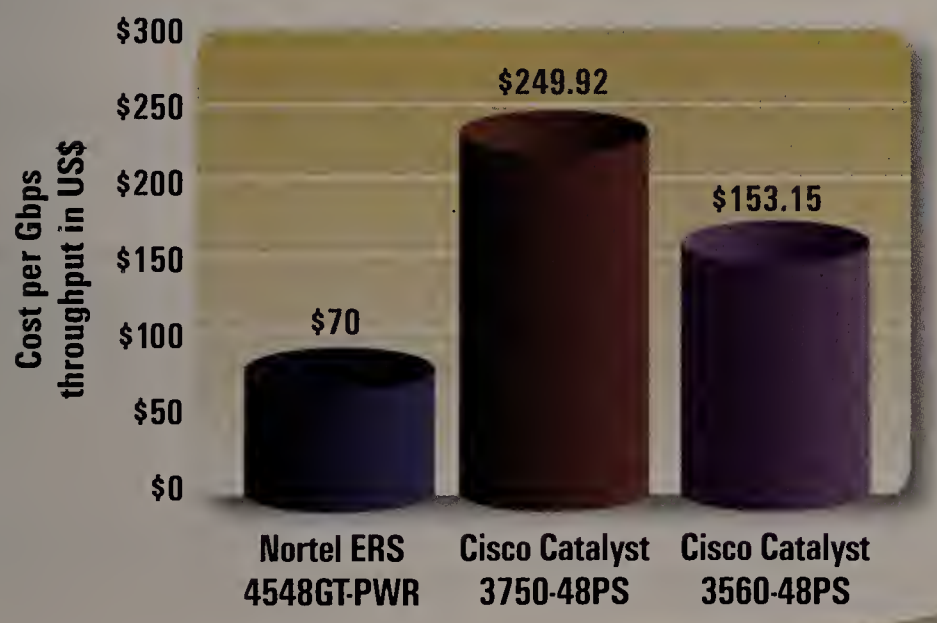
as Reported by Spirent SmartFlow 5.5



Note: 1.) All switches tested with maximum available GbE uplink ports 2.) The frame forwarding rate was measured in Layer 2 switching mode and bidirectional traffic was generated in a full-mesh configuration where ports of the same type were grouped together.

View the full ERS 2526/2550T report at:
http://www.tolly.com/DocDetail.aspx?DocNumber=207178

Cost-per-Gbps of Throughput in a Standalone Switch Configuration



Sponsor: Nortel

Document numbers:
207178 and 207237

For more info on this test, visit:
http://www.nortel.com

View the full 4548GT-PWR report at:
http://www.tolly.com/DocDetail.aspx?DocNumber=207237

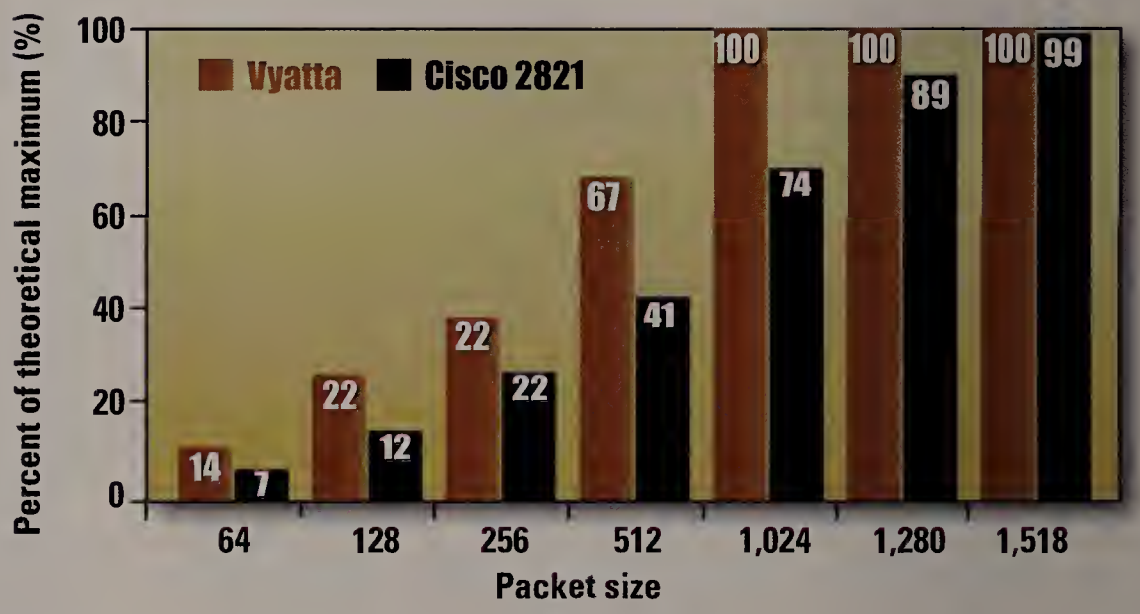
Sponsor: **Vyatta**
Document number: **207190**
Product class:
- **Open-source software-based router**

Products under test:
- Vyatta 1.1.2 running on Dell PowerEdge 860 Server system (Single Celeron D 2.80 GHz, 256K cache, 512 MB DDR-2 SDRAM, OS: Linux Kernel Ver. 2.6.16)
- Cisco 2821 Integrated Services Router, software version 12.3(14) T4

Testing window: **February 2007**
For more info on this test, visit:
- ***http://www.vyatta.com***

Vyatta open-source router doubles performance over Cisco 2821 in head-to-head test

Bidirectional Zero-loss (≤ 0.001%) Routing Throughput
(as Reported by Spirent SmartFlow 5.5)



There is a myth that proprietary hardware products are always better choices over standard x86-based systems for enterprises and small- to medium-sized business (SMB) networking needs. As the networks become more complex and diverse, network managers have to pay more attention to upfront investments, ongoing maintenance costs and costs to scale for future growth. For the majority of SMB and enterprise branch office managers, open software on standard hardware is the answer to performance and cost-effective growth needs.

Tolly Group tests show that a Vyatta open-source, software-based routing and security solution on an x86 processor-based system (Dell PowerEdge 860) delivered twice the performance for half the price of a Cisco router tested during a Gigabit Ethernet-to-Gigabit Ethernet (GbE) scenario with all packet sizes tested.

The Vyatta software achieved Layer 3 wire-speed throughput (2 Gbps of aggregate throughput) for 1,024 bytes or higher, while a Cisco 2821 Integrated Services Router never achieved wire-speed performance in any tests. For the 64-byte bidirectional throughput test, Vyatta offered double the throughput of the Cisco device —282 Mbps while the Cisco 2821 attained 138 Mbps.

Engineers also proved that the Vyatta software router delivered lower frame loss than the Cisco 2821 for all packet sizes and achieved zero frame loss with 1,024-byte packets and higher.

Tolly Group engineers also computed a cost-per-Mbps of throughput value to assess the the price/routing throughput performance. With a retail price of $1,797 for bundled hardware/software/support, Vyatta delivers price/performance from a low of 90 cents per Mbps (1,024 byte packets or higher) to a high of $6.37 (64-byte packets). The base system Cisco 2821, with a retail price of $3,334.98, has a cost-per-Mbps ranging from a low of $1.69 (1,518-byte packets) to a high of $24.17 (64-byte packets). WAN interfaces were not factored into pricing.

When users want to add an additional Layer 3 Fast Ethernet routing port, Cisco users pay $1,009.99 (CDW.COM) to add one Fast Ethernet Layer 3 port (Cisco 1-port HWIC, MFG# HWIC-1FE). Vyatta users, by contrast, pay only $65 for a GbE port since they can leverage the structural cost benefits of the x86 system.

- **Outperforms the Cisco 2821 router consistently in Layer 3 Ethernet bidirectional zero-loss throughput, achieving up to twice the performance at half the price**
- **Operates at Layer 3 wire-speed across two onboard Gigabit Ethernet ports when forwarding 1,024-byte packets or higher**
- **Delivers lower packet loss than the Cisco 2821 for all packet sizes and achieves zero packet loss with 1,024-byte packets and higher**
- **Leverages standard hardware and the structural cost benefits of the x86 ecosystem to offer a flexible, extensible and faster solution at attractive price points**

View the full report at:
http://www.tolly.com/DocDetail.aspx?DocNumber=206190

NAC test reveals Mirage Endpoint Control secures networks with real-world applications

- Protects customer networks from infected, out-of-policy, and unknown endpoints
- Stops behavioral threats, preventing malware from propagating throughout a network
- Detects and stops unauthorized applications such as instant messaging and peer-to-peer file sharing
- Stops unknown/rogue devices such as gaming consoles, personal routers and servers until they are registered
- Protects wireless networks from unauthorized mobile devices such as iPhones and Windows Mobile devices

Features/Functions of Mirage Endpoint Control
Validated by The Tolly Group

Compliance and Monitoring	Requires authentication and host posture check for Windows, Linux and Macintosh devices, restricting access when devices are not compliant	✓
	Monitors behavior of all devices on the network, restricting access when policies are broken	✓
P2P File Sharing Control	Detects P2P packets and alerts network admins	✓
	Stops flow of P2P traffic	✓
	Revokes network access to offending applications or endpoints	✓
Instant Messaging Checks	Detects IM traffic from AOL, Yahoo!, MSN Messenger and Trillian	✓
	Stops flow of IM traffic	✓
	Blocks network access of offending applicatoins or endpoints	✓
Rogue Device Registration	Detects unregistered devices such as personal routers, servers, Xbox and PlayStation	✓
	Allows devices to register for network access	✓
WLAN Access Control	Detects and blocks Apple iPhones and Windows Mobile devices from accessing wireless LANs	✓

Mirage Networks Endpoint Control appliance provides security that controls or revokes network access to devices that are unknown, out-of-policy, or threat-infected, according to a recent Tolly Group hands-on evaluation.

Tests show that the Endpoint Control appliance restricted access of Windows XP, Windows Vista, Linux and Macintosh clients until each user successfully entered authentication credentials, completed a system scan to validate OS patches, anti-virus and anti-spyware versions and personal firewall versions/status, and, lastly, that the clients followed predefined behavioral guidelines. When endpoints were granted access, Mirage stopped a range of threats from propagating throughout the network.

The Tolly Group validated that Mirage's Endpoint Control appliance effectively deals with applications such as Peer-to-Peer (P2P) and Instant Messaging (IM), and can also identify and isolate rogue devices seeking access to the network, and preclude nuisance devices, such as gaming consoles from commandeering network resources without authorization. Engineers also validated the ability to isolate Apple iPhones from joining wireless networks where they could be the root cause of broadcast storms.

On the P2P side, the appliance also blocked a Windows XP client's network access when it attempted to use P2P, and issued an SNMP alert and E-mail notification to network personnel.

Additionally, the Mirage appliance detected IM traffic from services such as Yahoo Instant Messenger, AOL Instant Messenger, MSN Messenger and Trillian and proceeded to stop the flow of IM traffic, blocked the endpoint client's network access, and issued an SNMP alert and E-mail notification to network personnel.

Tests also show the the Endpoint Control appliance detected rogue routers, servers, and Microsoft Xbox and Sony PlayStation gaming consoles. Further, it blocked network access until the devices were registered.

Finally, engineers also validated that the Endpoint Control appliance detected an iPhone and a Windows Mobile device connecting to the wireless network and blocked network access until the devices were authenticated.

The upshot is that while many NAC devices offer some level of access control, Mirage Networks has proven that its Endpoint Control appliance enables tangible customer applications to utilize endpoint access control that is above and beyond general endpoint security.

Sponsor: **Mirage Networks, Inc.**
Document number: **207252**
Product class: **Network access control appliance**
Products under test:

- **Mirage Networks Endpoint Control, version 3.1**

Testing window: **September 2007**
For more info on this test, visit:

- ***http://www.miragenetworks.com***

For more info on this test, visit:
http://www.tolly.com/DocDetail.aspx?DocNumber=207252

NETGEAR Gigabit Stackable Smart Switches demo blazing speed, security, QoS, resiliency and management

NETGEAR ProSafe 24- and 48-Port Gigabit Stackable Smart Switches Feature Validation		
Resiliency	Automatic master fail-over	✔
	Redundant stacking architecture	✔
	Hot-swappable switches	✔
Management	Stack manageable via single IP address	✔
	Web-based management interface	✔
	SNMP-based management software support	✔
Security	802.1x via RADIUS	✔
	MAC-based Access Control List (ACL)	✔
QoS	Rate limiting	✔
	Layer 2 (802.1p) prioritization	✔
	Layer 3 (DSCP) prioritization	✔

Note: Figure shows only features validated by The Tolly Group, not entire spectrum of ProSafe GS748TS and GS724TS Gigabit Stackable Smart Switch features.

- **Delivers wire-speed performance for all frame sizes tested in a full-mesh configuration for 48-port and 24-port switches**
- **Offers comparable security and QoS features to managed switches**
- **Manages the stack easily with a single IP address and intuitive Web-based management**
- **Demonstrates redundant stacking architecture via a pair of bidirectional stacking ports per switch, which provide 20 Gbps aggregate throughput in stacking ring topology**
- **Integrates key stackable switch features into SMB domain in a cost-effective way**

Recent Tolly Group tests show that the NETGEAR ProSafe GS748TS and GS724TS stackable smart switches support advanced network features that are important to SMB and branch office users while also delivering robust performance and functionality.

In a feature evaluation, engineers ran various tests under the categories of resiliency, management, security and QoS to validate capabilities. Engineers proved that the ProSafe GS748TS and GS724TS support advanced security and management features normally offered in more expensive products.

In a Layer 2 Gigabit Ethernet switch performance test, the NETGEAR stackable switches achieved wire-speed throughput in 48-port and 24-port, full-mesh configurations for all frame sizes tested. This equates to 48 Gbps and 24 Gbps aggregate throughput for the GS748TS and GS724TS, respectively. What this means is that the ProSafe GS748TS and the GS724TS have ample headroom for growth and embrace high-bandwidth applications.

Tests also proved that each high-speed stacking port supports 5 Gbps of traffic in each direction. Engineers also witnessed sub-second fail-over when one of the active switches in the stack was failed. Tests also validated that the NETGEAR switches support rate limiting and Layer 2/3 prioritization.

From a management angle, engineers verified that the stack can be managed via a single IP address and also verified that users can manage the NETGEAR stack via a Web browser and SNMP-based management software.

On the security front, Tolly Group engineers verified that the ProSafe GS748TS and GS724TS authenticate users via 802.1x and refer to a RADIUS server to verify user credentials. They also proved that the switches enable administrators to allow or deny access based on MAC addresses.

Sponsor: NETGEAR, Inc.

Document number: **207206**

Product class:

- **Gigabit Stackable Smart Switches**

Products under test:

- **NETGEAR ProSafe GS724TS and GS748TS GbE stackable smart switches running firmware version 1.0.1.4**

Testing window: July 2007

For more info on this test, visit:

- ***http://www.netgear.com***

View the full test summary at *http://www.tolly.com/DocDetail.aspx?DocNumber=207206*

GEARHEAD
Mark Gibbs

Analyzing Deferred Procedure Calls

Faithful readers will know I'm still on the hunt for what is causing Deferred Procedure Calls to drive wild swings in processor utilization on my Windows XP machine. I rebooted the box but the DPC utilization of around 40% returned for most of Tuesday and lasted through to Wednesday when it magically settled back down to around 2%.

Before I elaborate on that let me note I am lucky my computers are running at all. I live in Southern California and on Saturday the Santa Ana from hell blew in (actually, it was really more like an explosion). I spent much of the day picking up things that blew over and battening down the hatches on the Good Ship Gibbs in 50 mph gusts and 90 degree heat.

I'm lucky my computers are running at all.

Sunday was when things went from bad to worse. My wife's PC wouldn't start and it was then we noticed the house lights were rather dim. A quick test showed we had a whopping 60 volts! The chance of damaging equipment under such conditions is high.

We've had occasional, short-lived brownouts in high winds in the past, but this one lasted 18 hours. The next day we had a complete outage until midday, but to my surprise and relief, all was well with the electronics.

That was when I restarted my PC and found the high DPC utilization was back. Last week (www.nwdocfinder.com/2228) I mentioned that Microsoft's Mark Russinovich suggested I try the Kernrate (www.nwdocfinder.com/2229) sample profiling tool, which tracks how CPU time is spent for both kernel and user mode processes.

At about the same time reader Sean Fischer wrote: "We had a similar problem with wireless laptops at a major hospital where I was implementing a new Cisco WLAN (approximately 300 access points). A small number of Windows XP clients would become extremely sluggish at times. Task manager would show 100% CPU utilization, but the individual tasks did not add up to 100%. We used Process Explorer to trace it to DPCs."

Fischer says they diagnosed the problem using another Microsoft tool, RATTV3 (www.nwdocfinder.com/2230). This utility is less complex and looked easier to use than Kernrate so I decided to try it first.

RATTV3 consists of two programs: RATT, which does the performance sampling using Event Tracing for Windows, and CSWA, which analyzes the collected data.

RATT runs as a system tray application and samples kernel activity for three minutes then calls CSWA to process the data. The data is a record of the time spent in Interrupt Service Routines, DPCs and DPC Timers (a mechanism for timing out execution of procedures for things such as preventing performance problems).

The output of CSWA is a little tricky to interpret as it divides timing into "buckets" — for example, from 4.00us to 4.99us, so an event that takes 4.54us would add one point. Of course, when you look at the results you really have to multiply the number of events in each bucket by the median duration of the bucket to get the real execution time.

Next week: What did I find? Send your output to gearhead@gibbs.com.

COOLTOOLS
Keith Shaw

Digital photo frames go wireless

The scoop: Momento 100 digital picture frame, by i-Mate, about $300.

What it is: The Momento 100 is a 10-inch digital photo frame that adds wireless LAN (WLAN) connectivity as a way for users to get their photos from a shared PC or the Internet onto the frame. The frame also includes more traditional means of getting photos onto the device, including a memory card slot (supporting SD, MultiMedia Card, xD Picture Card, SmartMedia and Memory Stick formats) and USB port (for USB flash drives). The company also makes a 7-inch display version for about $200.

Why it's cool: The addition of a wireless connection means users can place the photo frame in areas covered by their WLAN, as opposed to near an Ethernet port. The Internet connection also lets users get updated photos to the frame easier than removing a media card, going back to the PC to add them, and then back to the photo frame. With wireless on the device, a frame owner living in one part of the country (Grandma and Grandpa, as long as they have a WLAN) can receive updated photos from friends and family living in other states. This eliminates sending out e-mails and dealing with PC issues.

The pictures in the Momento 100 can be swapped out wirelessly.

The Momento 100 can access media RSS streams, such as those offered by Flickr and other photo-sharing sites. But i-Mate has its own photo-sharing service, Momento Live, which lets users upload their photos to a Web site, which then get sent directly to the photo frame. Once you register your frame with the Momento Live and set up your user name, you can send photos to the frame from that e-mail address. You can also invite friends and family to send photos to the frame, but they have to sign up for a free account. This requirement prevents unknown people from sending photos to the photo frame (photos are sent via e-mail to a custom address).

Some caveats: Trying to use the feature where the digital frame can view photos on a shared PC (a Windows PC sitting on a home LAN) was a nightmare. First, this feature requires Windows Vista or Windows XP with Windows Media Player 11 installed. This required a few reboots and updates, including one update where I needed to go to Microsoft's Windows Update page and find a specific "Update Rollup" patch. The on-screen setup of the frame is handled through an overly sensitive remote control, which uses membrane-like buttons that tended to overcompensate. Using the remote to type in a long WPA key on an on-screen keyboard produced several errors and restarts, and just using the remote control to navigate through screens led to many "around the horn drive-bys" (that's where you push the arrow key too many times and the highlighted area goes past the option you wanted).

Bottom line: If i-Mate can make a better remote control and work on better sharing capabilities with Windows PC (or even add Macintosh support), they'll have a winner. Adding wireless connectivity to a digital photo frame is a great idea to keep the photos on the frame updated and fresh. And that's all that grandma wants anyway.

Grade: 3.5 stars (out of five).

Shaw can be reached at kshaw@nww.com. New Cool Tools video show every Thursday, and Twisted Pair podcast every Friday at www.networkworld.com.

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©2007 IBM Corporation. All rights reserved. Lotus Sametime 7.5 offers Voice over IP communications within the enterprise. Third-party offerings are available to integrate IP Telephony with Lotus Sametime.

_INFRASTRUCTURE LOG

_DAY 56: Our voice and data networks are out of control. Nothing's unified. Nothing's integrated. We have to use different devices for different things. Gil's had enough.

_He's welding every device in the office together with a blowtorch. He calls it "The Unifier."

_DAY 57: I found a better way: Unified Communications and Collaboration solutions from IBM. Now we can integrate our networks to give us real-time access on virtually any device. With the IBM Lotus® Sametime® 7.5 platform we get way more than IM. It combines IP Telephony, Web conferencing and more into a single interface. We're working fast and for less.

_Does this mean our office is no longer a hard-hat zone?

Lotus.

IBM.COM/**TAKEBACKCONTROL**/UNIFY

T. Rowe goes 2.0

Web 2.0 technology helps the financial firm's call-center agents get better information to clients faster, proving its mettle for more widespread use

BY PAUL DESMOND

As vice president of T. Rowe Price Associates, Kirk Kness is responsible for identifying innovative uses of technology for the Baltimore-based investment company. In past positions with T. Rowe he was involved in multimillion-dollar infrastructure projects, but these days he's busy implementing relatively low-cost, Web 2.0-based collaboration tools, including wikis and blogs. The company's goal in using Web 2.0 is to gather information more effectively companywide, and make it easy to find, share and use — perhaps in ways the company has yet to envision.

What specific Web 2.0 applications do you have in place?

We have the Confluence wiki platform [from Atlassian Software] in our call center, [Jive Software's] Jive Forums [discussion forum] platform in place, and pockets of instant messaging rolled out. We're also starting to look at persistent instant messaging, as supported by a product called MindAlign that Microsoft just bought.

But it's not really about the tools; it's more about what you get from the tools. The real value that we're trying to get — and what I'm trying to drive toward — is what Web 2.0 is supposed to bring to an enterprise. Web 2.0 is all about harnessing collective intelligence, discoverability, low-barrier tools, emergent structures, collaboration, unintended use and community. They are the factors that we're really starting to try to figure out. How can we drive to those using these different tools? What can they bring us?

Let's start by explaining that first one, harnessing collective intelligence.

That's the ability to actually gather knowledge. So, in the context of collaboration, how can we create tools, how can we put in place models that allow people to collaborate who maybe naturally wouldn't collaborate? I don't believe that if you put a tool out there, and you say, 'Everybody collaborate now because it's for the better of the company,' that it's actually going to happen. You collaborate around a community that forms naturally. And that's the thinking that we're trying to bring to the enterprise. How can we better enable what I call 'smart information' or making content smarter so that we can make our employees smarter? By making our employees smarter, we then ultimately make our clients more informed.

OK, how about the other tenets?

Discoverability is basically the ability to get the content into forms or formats so it can be discovered. That's the linkable model that's used on the Web, so everything is discoverable. If information is locked in an e-mail somewhere, it's not discoverable. If it's not discoverable, then it cannot create community. Low-barrier tools are really important. We cannot create friction for our associates. With traditional Web content tools, it tends to be difficult to enter content. Wikis are public-authorship-type tools. It's 'what you see is what you get.' You may even have the ability to author content in Word, and then push a button and publish it out. That's why blogs exploded — because [publishing] became easy. If you think about Web 1.0, it was about creating Web pages and knowing HTML. How many people do you know who have a blog also know HTML? Emergent structure is what emerges from the collision of this information. That's where tagging and folksonomies and discoverability come in. I can tag a piece of content and not know that Brian down the hall had another piece of content that he tagged similarly, and all of a sudden there's a relationship between those two pieces of content.

What do you mean by folksonomy?

Thomas Vander Wal coined the term folksonomy in 2005 to mean an ordered set of cate-

COME TOGETHER

Fostering collaboration takes an effective mix of technology, planning and process, as you'll learn from these three experts:

- **Kirk Kness** explains how T. Rowe Price is harnessing the power of Web 2.0 technology to empower employees and make customers happier. **This page.**

- **Laurie Heltsley** tells how she gets Procter & Gamble employees excited about collaboration - and how it streamlines work by millions of hours. **Page 38.**

- **Tip Slater** says it's the process that makes collaboration a success at Boeing. **Page 42.**

gories that emerges from how people tag items. This is directly out of a book called *Everything is Miscellaneous*. That's as opposed to a taxonomy, which is when information is tagged upfront and then you try to follow that order. Folksonomy is when the order emerges by the way it's tagged. Aren't you glad I have this book [*Everything Is Miscellaneous: The Power of the New Digital Disorder*, by David Weinberger, 2007] in front of me?

Yes, I am.

So, that's emergent structures. The next one is collaboration, which is an outgrowth of how these things fit together. Unintended use was the next one, which gets to facilitating the ability for unintended use. You may have a situation where information that was created for one context is viable in a second context. A good example is when Google launched Google Maps and then somebody built an application that basically did a mash-up between Craigslist and Google Maps. It showed on a Google Map exactly where apartments for rent in Chicago were located. Google didn't intend for Google Maps to be used that way, but it spawned a whole other way of looking at something.

Community is basically allowing the emergence of community, allowing people to innovate by being able to share and communicate with each other.

Can you give an example of how all this plays out in practice?

Sure. Say I had a call that came into our Colorado call center and the topic may have been about a particular policy, say a new IRS policy around the Katrina disaster, and how they've eased up on a tax deadline. The rep doesn't know anything about it, so he gets a hold of a liaison and the liaison finds the relevant information and sends it back to the rep, who informs the client about what the ruling is. Now, what if another person calls in to our Tampa call center with the exact same question? The ability to know that that information exists can make our reps more informed and more intelligent, which makes our clients more informed and more intelligent. Instead of saying, 'I have to get back to you on that,' the rep can more intelligently find this information. Web 2.0 is really about information coming to you and to your space, where Web 1.0 was you go out and search for everything.

The call center is where you're using the Confluence wiki tool, right?

Right. In that particular case, we're using forums and wikis to document transactions. We're using tagging so that people can more easily find information, and we've got RSS feeds attached to that information so it gets published and is instantly available to anyone who has subscribed to a given topic.

I would imagine you've got lots of different topics to deal with. How do you make sense of them all?

That's a really valid point. Where we started with this is tax and IRA information, and we're starting to branch out from there. So, we've organized our topics at the highest levels around things like contribution, moving assets, redemptions and taxes. So, instead of [defining] a brokerage contribution and a 529 contribution and a mutual-fund contribution or annuity contribution, it's organized around contribution itself. Underneath that, you can find how it applies to brokerage or 529s or whatever.

If I'm a call center rep and I get a call about a tax question, how do I find information that will help me?

A couple of different ways. We built this collaboration platform that they can go into that has a base-level navigation based on the topics I just described — contribution, redemption or whatever. We've also got a Google search engine in place where they can search on that topic across more information [beyond what's in the collaboration platform]. We've got RSS feeds set up so they can look at the recently updated information, if they're just browsing for information. And we've got tagging in place. We do use a taxonomy where they can tag content the way they see it. So, ultimately, it starts to create emergent structures around the organization of content.

What effect have the tools had in your call centers?

We're now able to much, much more quickly get content available. We've been able to remove blocks around content flow and around content authorship. We're basically making it easier to fix content, as opposed to hard to enter content.

What would you say has surprised you the most about your deployment so far?

Two things. One, the adoption rate surprised me. It's actually catching on like wildfire. And I don't know why that would have surprised me, but it did to a degree. The second thing is the fact that the reps have the ability to comment and tag content, yet they don't do it, because they don't think they can. We have to tell people, 'Hey, you're allowed to comment, and you're allowed to tag that content.' And that's a cultural thing. But we're playing through that.

Any big disappointments?

Probably not at this point. I will tell you we definitely have some churning going on. And here's an example. I met with one of the head guys yesterday and he made this analogy, which I thought was really good. He says, 'Kirk, this is what I see. It's kind of like you're in a motorboat, flying across this perfectly pristine lake, going a million miles an hour. It's smooth sailing for you, but I'm in the back of the boat, looking behind, watching you churn the water. You're digging up stuff all over the place. You've got to turn around every now and then and look because I'm the one catching this stuff.' His point was that you have to recognize these tools can present big changes, and they do make waves. You just have to be cognizant of that and look back once in a while.

Desmond is events editor for Network World *and president of PDEdit, an IT publishing company in Southborough, Mass. Reach him at paul@pdedit.com.*

Getting Personal: Kirk Kness

Title:	Vice president
Company:	T. Rowe Price Associates
Responsibilities:	Innovation and strategy for IT, working with the business to think differently about new products, employing emerging technologies and creating a more effective process for innovation.
IT budget:	About $200 million
Number of IT staff:	About 800
Education:	Bachelor of MIS, Loyola College, Baltimore
Previous jobs:	Was a database administrator at Blue Cross Blue Shield of Maryland and CSX Corp.
First PC:	"My first PC was the very first IBM PC that ever came out, because my dad worked for IBM. We had one in 1981. Whatever that thing was called, we had one."
First Internet experience:	"Probably eBay. I was signed up for that right when it came out."
Home network:	Three PCs and two laptops on a wireless network.
Words to live by:	"Don't think of things as they are, think of them as they can be."

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_INFRASTRUCTURE LOG

_DAY 69: All we need is one specific piece of info. Gil almost had it, but his hand cramped. How are we supposed to find trusted business info when these massive volumes of disparate, conflicting information keep pouring in?

_Gil just grabbed a stuffed panda.

_DAY 71: The answer: IBM solutions for leveraging information. Now we can cleanse info and standardize source data fields for consistency and accuracy. I can create a single, comprehensive and accurate record of info across our source systems. Finally, I can provide a unified, trusted view of our information so everyone can make better decisions.

_Our view of our data is now scalable. Just in time — I think we ran out of quarters.

Information Management

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IBM.COM/**TAKEBACKCONTROL**/ACCURATE

Presence comes to P&G

Presence-based collaboration tools help employees shake the e-mail habit, make decisions faster and save millions of hours of time

BY PAUL DESMOND

When Procter & Gamble CEO A.G. Lafley set out to create the world's most collaborative company, the challenge fell heavily on Laurie Heltsley. The director for special projects at the P&G Global Business Services unit responded in force, helping to usher in a desktop upgrade that put collaboration tools front and center on about 80,000 machines. The tools give employees an extra 15 to 20 minutes a day by making it easier for them to reach one another and get the information they need to make decisions.

You first embarked on your collaboration effort in 2005. What were you trying to achieve?

The idea was to integrate desktops in meaningful ways so people became more aware of each other. Presence was an important aspect of what we were trying to infuse into the desktop: making individuals more productive and in the process, making the community more generally aware of your presence — including how to contact you, how to quickly find information about you, [such as] where you are, your business unit, your phone number. And you're always two or three clicks away from a call or a chat rather than people having to look you up in a directory.

You're using Microsoft Live Communication Server and Office Communicator 2005 client, which includes instant messaging. What other collaboration-related features are you using from that suite?

We were certainly after the robust presence features. And presence in the Microsoft context permeates the e-mail client, which is Outlook, and Office applications like Word and Excel and PowerPoint. [P&G is using Office 2003 globally, and is making Office 2007 available.] E-mail is a huge business tool at Procter & Gamble. I would describe us as being very e-mail-centric but evolving towards other types of collaborative and more real-time tools. There is also the group or team software encapsulated in SharePoint Server 2007 from Microsoft. Again, presence permeates those services. Teams of individuals can congregate, share documents, share discussion, share announcements, share calendars.

Are you using other collaboration tools?

We use a number of tools around the fringes of all of that. It's not like we're a completely Microsoft enterprise. We have a lot of innovation in progress with companies like Google and are testing Google Search. We've had conversations with Skype and are experimenting with that for online phone services. And we maintain relationships with other companies that are also trying to evolve in the same space, like SAP, Seibel and others. Each of those tools and software suites have their own collaborative element. We use SAP widely across the company. For the general user population, we've centered ourselves around the desktop and the core desktop applications, but then we have other kinds of software that may be more functionally specific or business-unit specific that also have a collaborative element. And then beyond that we're big into audio- and videoconferencing. And we've been experimenting with telepresence, which involves elevating that video capability into a more real-time, life-size, environmental kind of capability.

I understand your philosophy was not to force collaboration tools on your employees but create demand for them. Can you explain how you do that?

About two years ago I sort of banned the use of the word 'deploy' and said, we're not going to deploy anything anymore. We're going to put this product on the shelf, and we're going to have people adopt it willingly. And the reason they will do that is because we're going to make the story and the business case so compelling that they absolutely can't refuse. For all of the products we now have in the hands of employees around the world, in almost 100% of the cases they went and got

the software and willingly put it on their desktops and engaged. What you get is a population that isn't resisting you from the beginning. And the whole fear factor and resistance to change is greatly diminished when you're making a choice rather than being given a mandate. Today, our measurements tell us we've saved employees about 111 million minutes worth of time [as of late September 2007]. [Ed note: That translates to more than 231,000 8-hour days.]

How do you do capture that?

We take some typical tasks that an office worker does and have them complete the tasks using their old way of doing things. Then we go back and have them complete the same tasks [using the collaboration tools] and measure the difference. We'll do that for a sample size that is statistically relevant. We also do a lot of user surveying to understand the degree of satisfaction with our services. Unlike previous deployments, we have not seen a dip in user satisfaction associated with the change. In fact, we've seen user satisfaction elevate by two tenths of a point on a 10-point scale. That's unprecedented. And the final thing we do is we ask them, 'Do you feel that these tools are saving you time and, if so, about how much?' In many cases, people are saying that they've been saving 15, 20 minutes a day as a result of doing things differently. Our users are reporting that themselves; it's not something that we manufactured for a PowerPoint presentation.

What collaboration applications have been more successful than others?

In the last year or two, our use of audioconferencing and video in general as a collaboration tool has accelerated — has gone through the roof in many cases. Our investigation into telepresence is a result of that. I firmly believe that video will be the next true enabler for the enterprise, and we'll be the second ones to know [because] the consumer market has latched on to video in a big way. Much of what we still do today textually or verbally you can capture so much more efficiently [with video]. For example, training video-on-demand has been relevant for a while now. There are so many more opportunities where a message needs to be delivered or a demonstration needs to occur. Video could play a role there in providing a much more efficient delivery mechanism than traditional means. So, we're looking at that really hard, and that's in addition to traditional videoconferencing, which has its purpose, and audioconferencing, which is huge here. Our audioconferencing minutes have probably tripled in the last five years.

Presence technology has been tremendous because it opens the window to connecting with other employees. If you have front and center on your desktop some of these powerful presence applications — and Microsoft Office Communicator is one of those, there are others — from there you can do things like initiate a videoconference, initiate a phone call, initiate an audioconference, initiate even an application-sharing session. I can initiate a file transfer. So, there are lots of things that I can drive off of presence just by virtue of the fact that I know you're sitting there right now, and you're available. A typical e-mail conversation might be a serial, lengthy event if I have to bounce a conversation back and forth over the course of a day or two. Today, I attempt that because it's a habit. But I will immediately be coached by the collaboration tools to instead reshape the conversation into an immediate one via phone or chat. If I type Lisa's name into the destination address line, my e-mail client will tell me that she's online right now and I can just click on her and talk to her rather than send an e-mail. And if I can't reach Lisa, all right, who can I reach? Who can answer this quickly? It helps accelerate the pace of our work. I can take care of the matter at hand immediately rather than stretch it out in a serial e-mail fashion over a day or two.

We've had instant messaging since 1999 or 2000. The difference is, it was a separate entity on your desktop. You had to go there intentionally. And that's not your first instinct if you're habitually pushing business through e-mail. And being an e-mail-centric company, it was hard to move people out of there. Having presence tools that are integrated with e-mail, as is the case with [Live Communication Server] and [Office Communicator] and Outlook, gives us more immediacy.

What about application-sharing? How much of that is going on?

Everybody uses NetMeeting to share applications with someone else. I might be working on a spreadsheet that I need Lisa to review. We could edit them together and we're done. That happened in 12 minutes versus 12 hours if you bounce the file back and forth as an e-mail attachment. The presence engines we have are capable of driving those kinds of application sharing sessions. You can start a chat and an application share right out of the same interface.

Has anything disappointed you about the collaboration technology?

I'm someone who looks down the road. I'm looking at that next horizon now. What disappoints me a bit is that as far as we've come with the introduction of these collaboration tools, I still think we have quite a ways to go both technologically and culturally to really work at our peak. I mentioned video earlier. I believe video is going to be transformational in this company in terms of collaboration. Now, looking at that next horizon, I know how much more we can do and what the opportunities are. I want to get this [initial phase] behind us and provide the leadership necessary to get to that next horizon. So, it's not so much a disappointment — just maybe a bit of fatigue, knowing that we've gotten so far and done so well, and we've still got so far to go.

Desmond is events editor for Network World and president of PDEdit, an IT publishing company in Southborough, Mass. Reach him at paul@pdedit.com.

Getting Personal: Laurie Heltsley

Title:	Director for special projects, P&G Global Business Services
Company:	The Procter & Gamble Co.
Responsibilities:	Manage strategic projects for the Global Business Services unit.
Education:	Bachelor's degree of Science, Western Kentucky University, emphasis in computer science and mathematics.
Previous jobs:	Vice president of MIS at Southwestern Publishing; responsible for IT infrastructure at Fruit of the Loom.
First PC:	"Timex Sinclair was plugged into a TV and it ran Basic. I got it because it was little. Even then I was looking for the smallest, most portable computer I could find."
First Internet experience:	"A guy came into my office and told me he was writing this app for the Internet. I remember telling him what a fad it was and he should stop wasting his time and get back to work on J.D. Edwards accounting software."
Home network:	Each room is outfitted with an Ethernet jack, and a wireless network operates throughout the house.
Words to live by:	"Keep everything in perspective and have a good time."

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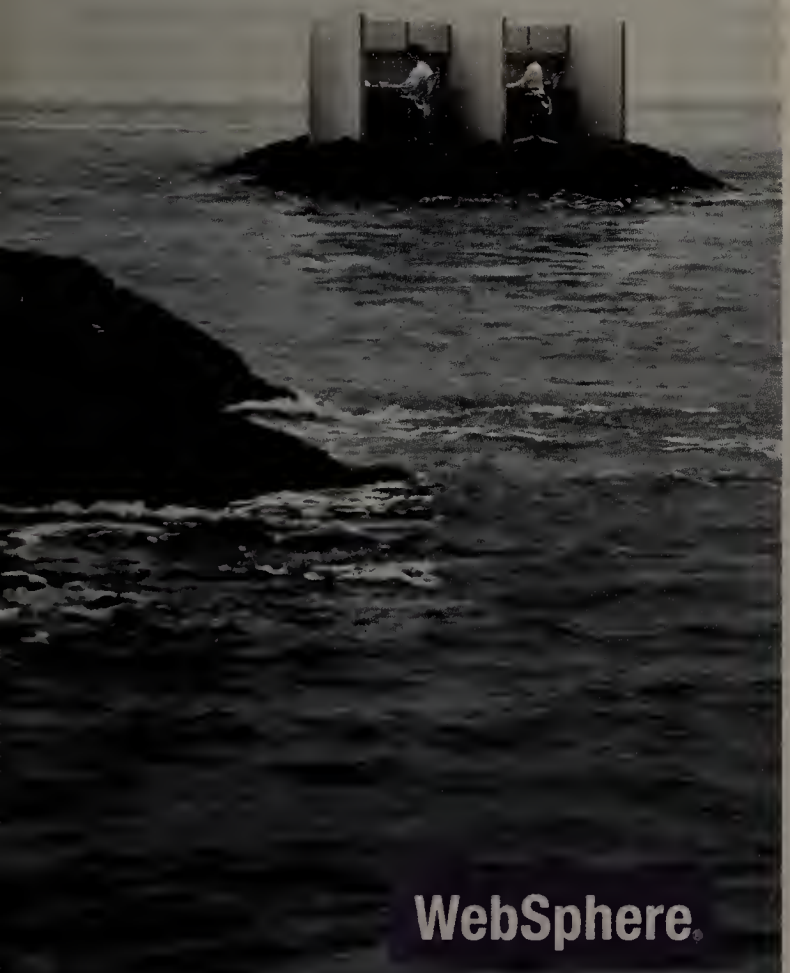
_INFRASTRUCTURE LOG

_DAY 84: Feeling really disconnected. We're not getting the most out of our existing assets. Service and application integration is a nightmare. Our connections are restrictive. We've got to stop working on these islands.

_Please rescue me from this lack of connectivity.

_DAY 87: I've taken back control with IBM WebSphere solutions. Now we can service-enable and connect our existing assets for mission-critical goals. We can reuse existing applications and save money by eliminating redundant systems. Now we're ready for any SOA integration project.

_Plus, no more jellyfish stings.



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Building virtual worlds at Boeing

Creating simulated wartime environments takes close collaboration, but it's the process rather than the tools that determines success

BY PAUL DESMOND

Want to see how an F-16 will react to the latest antiaircraft weapons? Tip Slater is your man.

As director of virtual operations for The Boeing Company's Integrated Defense Systems group, Slater is responsible for creating virtual environments that Boeing customers, chiefly the U.S. Department of Defense, use to test the latest wares and ideas. His team of engineers must collaborate effectively to make sure the events live up to customer expectations and go off without a hitch. Boeing uses various tools to collaborate among its far-flung business units, but Slater says it's the processes surrounding the tools that determine whether they do any good.

Let's start with an explanation of what your job entails?

I belong to an organization called Analysis Modeling Simulation Experimentation. Our job is to create an environment in which we can test out concepts and ideas for our customers, the majority of which are military. If a customer wants to try a wartime scenario, he can't afford to fly or move all the military [equipment] that he wants, and you can't afford to blow it up either. So our job is to pull together this synthetic environment so we can test out a concept or a hypothesis. For example, we have an F-16 flying over the desert in southern California, and the pilot will see on his radar all of the virtual and computer-generated entities that we have that environment.

And LabNet is the network that connects the various Boeing labs that may participate in these events?

Yes. We usually operate about 70 to 100 labs on the network at any one time. We've got the capability of connecting [all 700 Boeing labs], but we've never done it. The network is very fast and very capable. I can only handle probably 10 milliseconds of latency before the pilot actually sees it on the screen.

What is the role of Web 2.0 and other collaborative technologies in that environment?

When we run an event it's like a production. Behind the scenes we've got a number of people at each of the labs who are managing the network and the visualization that's going on. And the tools that they use to collaborate are instant messaging and some unique voice systems. It's like behind the scenes of Monday Night Football. The event producer is connected to all the labs that are involved in the event and maintaining the control of the operation. Those are the collaboration tools to make sure that the system operates.

What collaboration technologies do you use to get work done more effectively?

When we set up a demonstration or an experiment we have to bring people from across the enterprise to make it work. That's where we use collaborative tools. For each event we set up an event site using Microsoft SharePoint. People can post their announcements in there and drop in briefs and so forth. We use Microsoft Project on SharePoint as a communication platform. Information, charts, notes, schedules and such are posted there, as opposed to using e-mail. We use WebEx routinely [for Web conferencing].

We're just starting to use wikis to help build events. We're using instant messaging, primarily when the software folks are working on coding. We're looking at bringing in some collaboration tools that will let us do computer-to-computer collaboration. We're evaluating is called the TouchTable, [which is a computerized table] that exists in two locations and both operators are looking at the same screen. And they can expand the screens, contract the screens; there's a lot of visualization involved. They can be looking at a map and deciding what to use as a target area.

What about digital white boarding?

We use digital white boards in different areas. One is facility management, where we have three facilities that we operate at the same time with customers in all three of our [major event] locations. They'll use the digital white boards to describe what the screen layout for all the three locations is looking like, and how we are going to handle the customers in each location. And the network operators will use the digital white board to describe things like their network design for any given operation. We're moving some of the networks overseas and we hook into other organizations' networks, and there are a number of rules and regulations that we have to have on how the

networks are designed to meet government and company requirements. So they'll use the digital white board to talk to each other across the ocean. We've been doing that for about a year and a half.

What's been your approach to getting people to use these collaboration tools?

Before we purchase a tool we say, what's the concept of operations? In other words, how are you going to use this? We just can't go buy a tool and throw it out there. We did that about four or five years ago, and nobody used them. You need to have buyoff where a couple of organizations say, 'Yes, we'll use it and here's the concept we have in mind.' That's enough to kick it off.

But can you really predict how you're going to use the tool before you're actually using it?

The concept of operation is there to ensure that you have more than one person agreeing to the fact they're going to use the tool. Then you initiate the concept and it usually morphs into something else. Which is fine, because that just means people are using it. Probably 80 percent of the time we end up using the tool differently than we thought we were going to. What you don't want to do is have a smart engineer who's very articulate come in and sell an idea, and we buy a tool and nobody else uses it. It just languishes.

Have you been able to determine any kind of ROI on any of these collaboration tools?

I cannot put a number to it. But the rule of thumb in our operation is, we have to maintain the same number of people but expand our capability every single year. I've got to expand the [simulation] environment that I described earlier. I've got to take it to more places, integrate more labs and more capabilities, and I've got the same number of people to do it. And we've been able to do that. Collaboration is the key to making this work. I've got the same number of people, they're located across the enterprise, and I've got to do more things every day than I did yesterday. The only way we can get there is with collaboration tools. It also requires us to change the way we operate, so we're constantly looking at tools and operational concepts. In other words, how do we manage what we're doing? It's a constant battle. There are two key elements to this. Management's role is to provide the direction, the vision and the tools. And then the engineer's role is to provide the processes around how to use the tools and to standardize the way we're doing things. You can put the tools in place but if you don't have a common language or common process, they don't help you. We've also put together a team of folks to look at the different software and hardware tools that we use across this LabNet enterprise. We have representatives from every site on that team, working on which tools they're going to use and how they're going to do it. That's been in place about a year.

Getting Personal: Tip Slater

Title:	Director of virtual operations
Organization:	The Boeing Company, Integrated Defense Systems group
Responsibilities:	Develop and operate a high-speed network that allows interaction among all Boeing laboratories. Support experiments and demonstrations built within a Live Virtual and Constructive environment.
Number of IT staff:	Approximately 100
Education:	Masters in aeronautical science's degree from Embry Riddle Aeronautical University; bachelor's degree in business from Lowell Technological Institute.
Previous jobs:	Deputy director strategic architecture for Boeing, leading network-centric operations for the company; U.S. Air Force: 27 years as a flier in reconnaissance aircraft, staff officer working CENTCOMs command and control airborne systems, and communications officer, which included large computer acquisitions.
First PC:	TRS 80 with chicklet keyboard and a tape deck for memory storage. Wrote in Basic and decided purchasing software was easier.
First Internet experience:	1987, sending work information from a Mac.
Words to live by:	"It's not that hard."

And how is that working out so far?

Actually, pretty good. People truly do understand. We only have so much budget and you can't afford to buy different tools to do the same thing for all the different sites. It's just not cost effective.

What would you say has surprised you the most about your deployments of collaboration technology?

I expected the tools to give us more than they gave us, but what it boils down to is the culture of the organization. When you go across the country, you'll find different cultures in the different organizations you're working with, even though they work for the same company. Until you get the cultures to agree to a common terminology and a common process, the tools don't enable anything to happen.

What's been the most challenging aspects of implementing collaboration tools?

That gets back to the culture thing. I'm currently in Anaheim and have sites in St. Louis, some in D.C. and some in Seattle. They're all over the place. Each site has a number of tools and its own processes. And they came from other companies — Rockwell, Boeing, McDonnell Douglas, they had all their processes. So a lot of these people are very experienced engineers, come into the environment with ideas and processes and procedures that came out of their corporate heritage. We bring them all together and say, 'You're now going to collaborate and you're going to make this live virtual constructive environment, and all these labs are going to work together in this environment and they're going to produce this product.' And people stand up and say that sounds like a great vision. We love it. We want to work it. Then you start putting the tools in place and they say, wait a minute; we don't use that tool here in St. Louis. You've got to use this tool. Well, where did that tool come from? What were the site processes? What were the engineering processes? And pretty soon, you've got this chaotic stuff going on.

We've had to bring them together and step back and say, 'Look, you're working at the enterprise level. Forget your sites. What is the enterprise process and what is the best way we're going to move forward on this?' And it's taken us a while to get there, but we've started chipping away the different tools, and people begin to realize the tool isn't the issue, it's how you use the tool that's the issue, and that gets into the processes and how you develop those processes. And if there is one competitive advantage I think we've got it's the fact that we work across the enterprise and we recognize culture is probably the one thing that's going to stop us. We have to attack that first and foremost. Any company or enterprise that's going use collaboration tools, they're going to have to approach it that way. If somebody in the United States wants to work with India or Hong Kong, or anywhere else, you'd better figure out how you're going to [work together] first before you add a tool onto it, because the tool isn't going to do anything for you.

Desmond is events editor for Network World *and president of PDEdit, an IT publishing company in Southborough, Mass. Reach him at paul@pdedit.com.*

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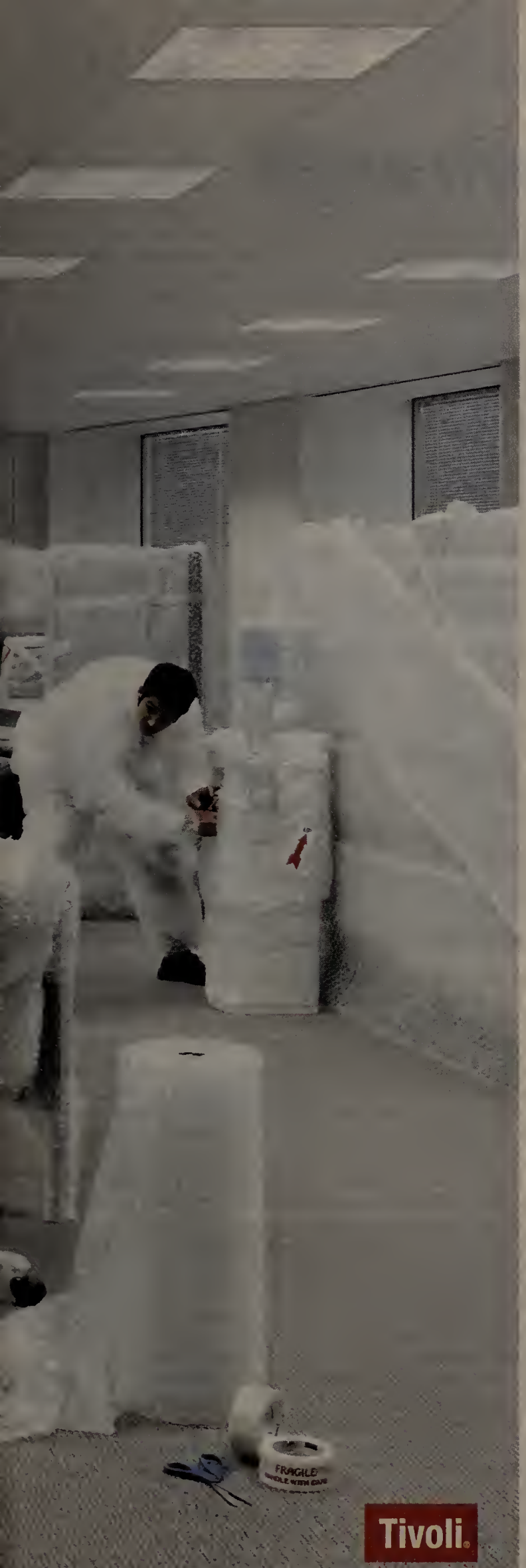

Tivoli.

_INFRASTRUCTURE LOG

_DAY 82: There are so many risks out there. So many things that can happen to our business: natural disasters, spikes in traffic, mergers. How do we prepare? One in three companies don't recover from unplanned downtime.[1] Would we?

_Gil has wrapped everything in the office with bubble wrap. Everything. Just to be safe.

_DAY 83: I'm preparing with IBM Business Resilience Solutions. IBM Business Continuity Services can help us assess our risks and design a proactive plan to deal with them. IBM Tivoli gives us the visibility to diagnose and fix infrastructure problems. And the robust availability features of the IBM System p™ give us maximum uptime. The future feels so much safer now.

_No more bubble wrap. And I have to mail a package. Great.

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HP's 'shorty' provides new angle on blade server market

c3000 series rates highly for storage in the branch office

BY TOM HENDERSON AND RAND DVORAK, NETWORK WORLD LAB ALLIANCE

The big question when we opened the crate containing HP's BladeSystem c3000 Enclosure was: Is this thing a blade server or is it a modular server put into a 6U rack profile? It's a bit of both. With its brand-new c3000 hybrid chassis, HP has remade its now-famous tower enclosure and the server's guts into a flexible blade-enclosure format, retaining all the niceties of discrete servers but adding the flexibility of rack/blade modularity. HP's c3000 Enclosure has a horizontal blade design that can accommodate as many as four full-width c-class blade devices or eight half-width server or storage blades.

Unlike HP's higher-end c7000-class blades, the c3000-family blade server is not the typical blade enclosure designed to be piled high and deep inside a network operations center. Instead, the c3000 we tested seems best suited for branch offices where it'll take up just the first six rack spaces, ostensibly sharing the rack real estate with other supporting equipment (routers, storage-area-network blocks, and other network devices or appliances).

The overall performance of these blades was quite good, but we have to note that HP knew our blade server tests incorporate a "green" element — we measure the electricity required to drive these things — and shipped low-end CPUs, thereby optimizing it for low power consumption.

HP also supplied two server blades, the HP BL460c (based on a 64-bit Intel dual-core 1.6GHz Xeon 5110 CPU; this is the slowest one shipped on the blade); and the HP BL465c that uses Advanced Micro Devices' 2110 HE CPU (1.8GHz, 64-bit, dual-core, also the slowest and smallest shipped with an AMD CPU). Both server blades came with 1GB of memory and have similar serial-attached-SCSI drive connections.

The performance characteristics of these slower server blades matched their clock rates. The slightly faster BL465c turned in a faster time of 392.3 microseconds vs. the BL460c's 425.2 microsec in the LMBench3 (our usual comparison test) processor fork+execve test, which tests the speed of context shifting and memory movement and allocation.

The interesting part is that the AMD-based blade used 62 watts at peak during the test sequence, where the Intel blade needed 77 watts at peak. This compares with a recent test we did on IBM's blades, which at a faster clock rate (2.66GHz) executed more quickly at 289.9 microsec in the processor fork+execve test, but used 89 watts at peak during the same test, with the same operating system — Fedora Core Linux — in the same configuration (albeit a quad-core CPU, rather than a dual-core). These numbers are somewhat hard to compare, but give an indication of good performance and power consumption.

HP's BladeSystem c3000 Enclosure sports a horizontal blade design that accommodates as many as eight half-width server or storage blades.

The c3000 blade frame and its components are fully modular and built to order. As the options for components are staggering, HP has a Web site that lets customers select components via a Java/flash application. It's a highly visual site, and specifics of each blade are selected by part type (computer blade, storage, tape and others) and by placing the selected components visually into the enclosure. HP should be commended for this new way of buying and configuring servers.

Storage options include drive arrays and tape drives. The drive arrays can be connected through the chassis or used as iSCSI targets from other internal or external host servers. Because the enclosure is designed to be a self-contained, mini data center, the storage options — often missing from more data-center-focused blade servers — will be welcomed by small businesses and branches that don't have access to high-speed, over-the-net backup architectures.

The HP StorageWorks Ultrium 440c tape blade stores data on LTO-2 cartridges, in increments of data starting at 400GB. We verified that 2:1 compression is standard. We also tested HP's StorageWorks SB600c All-in-One storage blade, which combines a supplied Windows Server Standard Edition to create network-attached-storage shares. The storage also can be used as an iSCSI target for virtualized storage for the computer blades. While seemingly targeted for Microsoft NT File System storage needs, we also could use other iSCSI initiators to populate the server after a few configuration steps were found.

NETRESULTS

BladeSystem c3000 Enclosure • HP • www.hp.com

NetResults: 4.63

Price: $22,100 as tested.

Pros: Comprehensive "data center in a box" options; strong management and deployment tools.

Cons: Administration tools need unification; number of options available is staggering.

Action	Weight	Score
Management/monitoring	25%	**4.5**
Power efficiency/performance	25%	**4.5**
Flexibility/features	25%	**5**
Serviceability	25%	**4.5**
Total score		**4.63**

Scoring key: 5: Exceptional; **4:** Very good; **3:** Average; **2:** Below average; **1:** Subpar or not available.

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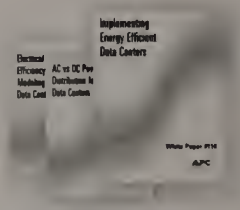

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The SB600c blade was fast. Same-server read/writes (a file copy of a 2GB file) went at 340M bytes/sec (with no other process pending and in a minimum configuration, services-wise). Writes from the BL460c blade were slower, 146M bytes/sec of the same 2GB file. Then we tried the iSCSI target software and found that file copies through a blade iSCSI initiator went faster (which surprised us, because there should have been some overhead or driver-efficiency attenuation to slow things down) at 161M bytes/sec, using the same 2GB file. The iSCSI performance was impressive.

Initial and ongoing management

Several applications are supplied that together let IT managers service, support, administer, configure and monitor the c3000 system tested. At the heart of the enclosure is the Onboard Administrator, which also launches the integrated Lights Out 2 (iLO2) blade-management connection to each blade device, which can in turn, launch the administrator.

Onboard Administrator lives as an autonomous process application inside the system board of the c-class enclosure. Through it, we could view many characteristics of the enclosure, including the c-class system's front-panel LED setup (which displays a health summary, basic IP settings, information regarding the enclosure and blade IDs, power consumption for the six fans on the enclosure, and PIN information, which is handy in branches or potentially physically unsecured areas). Unfortunately, the PIN can be as short as a single character, or there can be none at all — a bit of a security risk. Beyond the LED front-panel emulation, Onboard Administrator monitors each model's power, heat and other characteristics, giving a basic health synopsis and reports and logs with e-mail triggers for the gradients (from critical to informational) of system problems.

iLO2 comes in two versions. The standard edition is bundled with the system, and there's an advanced Blade Center Select license, which we received a demonstration of but did not test. The basic iLO2 functions are strongly focused on specific blade-device characteristics, and iLO2 observations are made via direct remote connections to agent software running on target blade devices.

The iLO2 controls include using a local, viewing machine's media as virtual media for the iLO2-managed device you are connected to (handy for updates and installations), viewing power settings, administering security accessibility (including managing SSL certificates), and configuring network and SNMP settings. Blade-server configuration wizards do such things as set RAID levels for blades, set up iLO2 agents on blades, and then kick-start them (with a reboot). The optional Blade Center Select iLO2 license enables such things as two-factor authentication, group accounts, virtual-machine provisioning, and setting higher or more thorough controls on power consumption. Some iLO2 functions require Firefox, and some of the selections for Systems Insight Manager (described next) require Internet Explorer.

There's a 30-day teaseware license for HP's Systems Insight Manager as well. This application has lots of niceties, such as managing virtual-machine deployments with precision (especially with VMware's software) or monitoring a variety of operating system environments: Windows (NT through present), Linux (Novell's SUSE and Red Hat) and The SCO Group's UnixWare. Insight Manager deserves a review of its own, but it's optional here and mentioned for those companies that would need its conveniences when rolling out multiple quantities of c3000. Oddly, some parts of Insight Manager require Internet Explorer 6.0+ explicitly. We used Firefox and found that Konqueror (KDE) and Safari (Apple's browser) can give Onboard Administrator and iLO2 fits where it refuses to work.

The Onboard Administrator and iLO2 management and monitoring settings were good enough to pass our three "smoke tests." We placed a plastic bag over the server to see if it would shut down without frying, because its settings were made to trigger shutdowns when the unit overheated. It took longer than we expected to fail in this test because power supplies would fail (there were also six fans), chill, then come alive again, redundantly. Eventually, the unit hit the "I'm going to cook" threshold and shut itself down, properly logging everything in detail as things failed and went into shutdown sequences. Just before and after restart, our e-mail box was flooded with warnings.

In our second smoke test, we "went rogue" and installed several operating system instances on the blades without telling Onboard Administrator or iLO2 to see if either could detect the changes. Because blade settings' probes are scheduled, these applications took about a day to discover something was awry. Once we also placed appropriate agents onto the blades, Onboard Administrator and iLO2 were very happy. We also found that even though a blade was misidentified, we still could access it remotely (the blade thought there was a Windows server on the blade, but we'd installed Fedora Core Linux) through the administrator's Java KVM capabilities. We were impressed.

And finally, we pulled blades, simulated failures and generally mistreated the c3000, giving it the full user experience in terms of the strange things that users do. We received no unexpected failures (all server blades and modules restarted with operating system complaints as expected, but all recovered within the constraints of the operating system), and we filled the logs with warnings, errors and reported jitteriness — completely and correctly.

Overall

We found the c3000 to be well designed for the Fortune 500,000 in terms of flexible component options, serviceability (blade changeout, and ease and understandability of hardware configurations) and management of the overall enclosure and its components. The management tools are strong, understandable, largely secure and capable. What we'd like to see are fewer management and monitoring software administrative overlaps, perhaps a convenient combination of iLO2 (with options) and Onboard Administrator, were it possible. Extended, this dream also would add the Systems Insight Manager with its options, unifying everything into a less overlapping, comprehensive, one-stop tool shop for using the BladeSystem c3000. It would make the difference between cold calculation against HP's formidable competition and a truly compelling value deal.

Henderson is principal researcher and Dvorak is a researcher for ExtremeLabs in Indianapolis. Henderson can be reached at thenderson@extremelabs.com.

How we did it

We received a configuration from HP consisting of the c3000 chassis (with licenses, $4,300), one BL465c G1 server blade, GbE2c Ethernet Blade Switch ($1,400), BL460c G1 server blade, SB600c Storage Server Blade (with an incumbent SB600c separate storage blade), and an HP StorageWorks Ultrium 448c Tape Blade ($2,000), HP StorageWorks 1.16TB Storage Blade (serial-attached SCSI drives, $9,970). The c3000 blade enclosure arrived with four power supplies, each 120V (240V split-phase or other international supplies and chassis are available).

We tested power consumption, and were able to corroborate HP's Onboard Administrator software's measurement of the blades sent, checking the figures it reported against our power-consumption test jig; variances were within 2%. We also tested the administrator's ability to shut down the blades when temperature levels were exceeded (blanket test). We removed and disabled the server blades in various ways to monitor the ability of iLO2 and Onboard Administrator to detect problems, recover and send warning messages. We also tested the StorageWorks 600c blade subsystem, using it as a Windows network-attached-storage device, as well as an iSCSI target; it performed well. We performed bulk file copies, and used the iSCSI target capability to format a partition and use it as an active virtual drive for several servers and clients.

guide to STORAGE

Is Fibre Channel dead?

iSCSI over 10G Ethernet ultimately will dethrone Fibre Channel, experts predict, so it's not too early to start planning a migration

BY BARBARA DARROW

Fibre Channel is the king of enterprise storage-area-network technologies. It's fast, it can handle long distances and it's got strong vendor support.

ISCSI, however, is the heir apparent. When it comes to new SANs, add-ons to existing systems or departmental-level installations at large enterprises that have Fibre Channel, customers increasingly are choosing iSCSI.

And when iSCSI over 10Gigabit Ethernet comes online, the biggest remaining hurdle to adopting iSCSI storage — its perceived slow performance — will fall. At that point, iSCSI will become the storage interconnection transport of choice across the enterprise.

How soon until that happens? Analysts expect support for 10G Ethernet will be built into enterprise storage arrays and servers within the next three years. This means IT executives need to start learning about iSCSI now, begin asking their storage vendors about their iSCSI road maps and begin planning for an orderly migration to iSCSI.

There are four reasons for the ascendance of iSCSI:

Cost. An iSCSI storage solution running on familiar Ethernet infrastructure costs a fraction of a high-end Fibre Channel solution in terms of the technology and the expertise needed to run it, IT experts say.

Staffing. Finding good Fibre Channel talent can be a challenge, and the scarcity drives up the cost. "It's hard to hire people with Fibre Channel expertise," says Andrew Reichman, an analyst with Forrester Research.

Compliance mandates. The growing list of industry and government mandates about the handling of data — Sarbanes-Oxley, the Health Insurance Portability and Accountability Act, credit card regulations — is driving companies to think out their storage and archiving policies carefully. The need to digitize documents, from simple forms to X-rays, likewise motivates companies to get their storage houses in order as inexpensively as possible without sacrificing utility and reliability.

Virtualization. "Server virtualization is a big driver," says John Sloane, analyst with Info-Tech Research Group. Many midsize companies that may not have invested in network storage because of cost now look to consolidate more of their Windows and x86 architecture with VMware. "To get the best benefit from VMware [for] disaster recovery, high availability and advanced data protection, you're really driven toward putting the virtual-machine files and data on a SAN," he says.

When VMware added iSCSI support last year, another hurdle to adoption fell away. That means companies that "may have been on the fence about purchasing network storage or staying with direct-attach storage now have a trigger that helps them see networked storage," Sloane says.

The confluence of these trends has led Burton Group analyst Nik Simpson to refer to Fibre Channel as "dead technology walking."

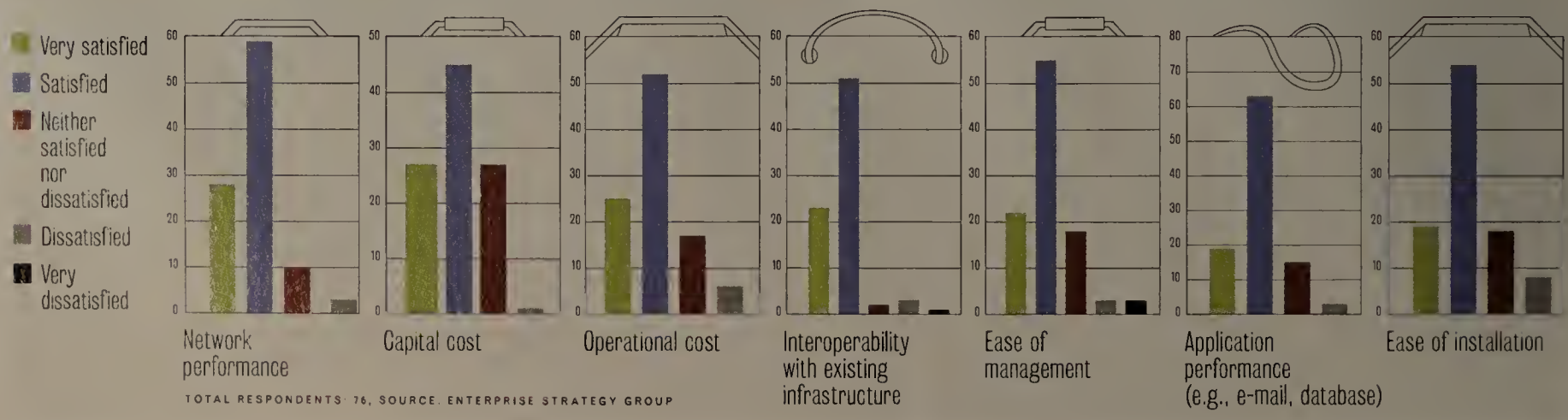
Cases in point

Many customers aren't waiting for 10G Ethernet; they're finding plain old Ethernet has more than enough horsepower to get the job done. That's the case for the IT department of Clackamas County, Ore., which has moved from Fibre Channel to an EqualLogic iSCSI SAN.

"Our Fibre Channel stuff is now completely gone except for one Brocade switch, [which] we

iSCSI SAN customers are pleased with the performance, cost and overall ease of use

Survey asks: How would you rate your organization's satisfaction with the following attributes of its iSCSI SAN(s)?

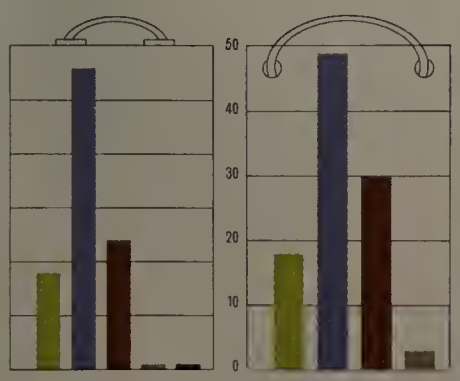


TOTAL RESPONDENTS: 76, SOURCE: ENTERPRISE STRATEGY GROUP

bought specifically to manage IBM tape drives," says Chris Fricke, senior IT administrator of information services for the county. "Now, everything is on iSCSI SANs: our normal file storage, our document imaging, our Exchange System and our databases," he says.

"It's considerably cheaper not to have to deal with special cards to get it to work, and we didn't have to train people on new technologies. Our primary business goal is not baby-sitting our storage infrastructure," Fricke adds.

Fricke isn't on 10G Ethernet yet, but he's building his storage network with 10G Ethernet in mind. "We'd made the decision that Fibre Channel wasn't working out and iSCSI was the bomb," he says. "We had to look at the entire market, so we did the evaluation. The biggest driver was cost. With Fibre Channel, what we had was 1GB host bus adapters (HBA), a 1GB backplane. To upgrade all that really is a forklift



Reliability for mission-critical applications (e.g., e-mail, database)

Vendor service and support

Brian Smith, technology manager at marketing communications agency Gem Group, decided to bag Fibre Channel in favor of iSCSI.

upgrade to pull it out and bring in four gigs or whatever. For us, that would have been at least a half-million [dollars] and not feasible. So we brought in EqualLogic for $50,000, and we'll grow that as we need it."

"Analysts have been talking about iSCSI on 10-Gigabit Ethernet for three or four years. It's taken awhile, but now it really is gaining traction and coming up the ladder," adds Info-Tech's Sloane.

Scott Christiansen, IT director for Leo A. Daly, an international architecture and engineering firm in Omaha, Neb., also is impressed with iSCSI SANs. The advantage of moving from a complete network-attached storage (NAS) environment to an iSCSI vs. a Fibre Channel SAN is cost "first and foremost," he says.

Indeed, Fibre Channel switch-and-HBA combos easily run to $4,000 per unit, whereas standard iSCSI SANs can operate with off-the-shelf cards.

The Daly show

In Leo A. Daly's case, a Fibre Channel solution would have cost six figures compared with less than half that for an iSCSI solution, Christiansen says.

The cost savings of iSCSI over Fibre Channel happen at every level, from the cabling up through the switch ports on the IP switches, Forrester's Reichman says.

Best Best & Krieger, a Riverside, Calif., law firm, is making the transition from HP Fibre Channel technology to iStor Networks storage for e-mail archiving. The move to iSCSI was a no-brainer, especially because the Fibre Channel infrastructure was aging. "For us, going from Fibre Channel to iSCSI was an upgrade," says Tim Haynes, senior manager of IT for the 400-person law firm. "We were pretty well maxed out on the Fibre Channel. To grow that would have been very expensive, and it gets even more complex to have a highly available storage system with Fibre," he says.

Overall, iSCSI brought simplification. The use of standard networking gear for storage traffic is a major benefit. "We're a Cisco shop, and we put in a 1GB Ethernet switch, and that's it. If it goes down, it's easy to move to another port on another switch, whereas to have a Fibre Channel switch sitting on the shelf as a failover, or even having one online for redundancy, is very complicated."

The Gem Group, a Lawrence, Mass., business specializing in promotional wares, also moved from Fibre Channel to iSCSI. It was outgrowing its Xiotech Fibre Channel implementation and evaluated Fibre Channel and iSCSI replacements last year. Its requirement for failover quickly ruled out four of the initial eight contenders on cost grounds, says Brian Smith, technology manager for Gem. The four remaining solutions — from EMC, Xiotech, Compellent Technologies and EqualLogic — all appeared to be in the same price range. After Gem Group looked at the cost of management, as well as upfront price, however, only Compellent remained.

Going with iSCSI meant that Gem Group, with a small IT staff, could rely on its existing TCP/IP and IP expertise. "Pricing was huge, but also, with just 18 people on the IT staff, we all wear a lot of different hats, and I was the only one who knew Fibre Channel after administering it for four years. It's difficult to manage, and learning it takes time. We're growing our business, putting in a new ERP system and we don't want the added expense of Fibre Channel expertise," Smith says.

The case for Fibre Channel

Of course, just as few companies have ripped out mainframes in favor of PC-based servers, enterprises will not forklift out Fibre Channel for iSCSI. "Fibre Channel will be around for a long time to come," says Tony Asaro, analyst for Enterprise Strategy Group. "There's a ton of investment in Fibre Channel in time, money and resources," he says.

Asaro adds that religious and political fiefdoms within companies can prolong a technology's life span. There are storage constituencies within organizations that have bet on Fibre Channel and will defend it to the end.

The result doesn't have to be an all-or-nothing proposition. Scott Winslow, founder and CEO of Winslow Technology Group, a Boston storage specialist, estimates 10% to 15% of his customers are on iSCSI, 30% on Fibre Channel and about 60% on a combination.

A common misperception about iSCSI SANs is that they can run on the same Ethernet backbone as other traffic. That is technically true, but the thought of such commingling is anathema to some experts, who cite security concerns.

In reality, the recommended implementation for iSCSI storage is to run it on a separate Ethernet network. Even in that instance, the costs are less than with Fibre Channel, because IT staff is dealing with the same set of protocols and management tools across data and storage backbones.

The Gem Group maintains separate storage and data networks for security and performance reasons "but the switches are interconnected," Smith says. "We have the data center and one data closet, so we have some physical servers and some vir-

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Survey says: iSCSI

According to research and surveys conducted by the Enterprise Strategy Group, iSCSI deployments will begin to replace storage-area networks and network-attached storage over the next three years: Early iSCSI adopters that have deployed networked storage believe their current solutions will be replaced by iSCSI SANs over time. Respondents who have experience with networked storage and iSCSI are beginning to recognize where iSCSI fits in their organization. They already have identified additional uses for iSCSI and are finding that over time they will continue to use iSCSI for applications for which they may have used a SAN or NAS in the past.

Existing NAS customers: 32% of respondents believe they will replace NAS with iSCSI to some extent over the next three years; 47% believe they will not replace existing NAS infrastructure but will deploy iSCSI SANs as new buildouts.

Existing Fibre Channel customers: Over the next three years, early iSCSI adopters that have deployed networked storage expect that Fibre Channel will be replaced with iSCSI to some extent (38%); 42% believe that iSCSI SANs will be new SAN buildouts and will not replace Fibre Channel over the next three years.

Over the next three years, to what extent will your organization replace Fibre Channel SAN(s) with iSCSI SAN(s)?	Type of networked storage already deployed	
	Fibre Channel SAN and iSCSI SAN	Fibre Channel SAN and NAS and iSCSI SAN
We will replace Fibre Channel SAN(s) with iSCSI SAN(s) to a significant extent.	25%	13%
We will replace Fibre Channel SAN(s) with iSCSI SAN(s) to some extent.	33%	43%
We will not replace Fibre Channel SAN(s) with iSCSI SAN(s) — iSCSI SAN(s) buildouts will be additive.	42%	45%

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Fibre Channel

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tual servers in the secondary closet along with a secondary SAN that's connected at fiber-optic speeds. That let us do longer distances between data sites without degradation," he says.

In addition, although iSCSI on Ethernet runs on standard cards, performance-boosting and pricier HBAs still are often necessary to take advantage of 10G Ethernet. Thus, the real cost savings of moving from Fibre Channel to iSCSI may be less dramatic than some proponents say. Winslow Technology's Winslow estimates in some cases the savings is more like 10% to 15% than the higher figures some pundits cite.

It seems certain that the cost of Fibre Channel components will fall as iSCSI storage gains ground, further narrowing the price gap.

Although purists may not be pleased, a hybrid Fibre-Channel-and-iSCSI approach is finding acceptance in many sites.

Winslow, who sells Compellent products, says several of his customers use Fibre Channel for their main storage repository but plug in additional iSCSI cards for failover storage needs.

Experts agree: iSCSI it will be

But even after giving Fibre Channel its due, the consensus is that iSCSI is the ultimate winner.

Analysts and users cite the upfront cost of Fibre Channel components, but stress that specialized expertise continues to be a problem. Winslow agrees that companies adding to an existing storage infrastructure or moving from direct-attached storage, more likely will opt for iSCSI over Fibre Channel. Another iSCSI plus is that such important features as data replication and snapshots have been à la carte menu items in the Fibre Channel realm but are part and parcel of iSCSI.

EqualLogic's storage solution brought Leo A. Daly advanced features, including snapshotting and bit-level replication between devices, for which they would have had to pay extra in the Fibre Channel world, Christiansen says. Snapshotting lets the system roll back to data at a set period in time in case of a failure.

Clackamas County's Fricke also stressed this point: "When we bought Fibre Channel, we couldn't even afford snapshotting or replication." Both capabilities are now deployed at no extra cost.

IT experts also say that with implementation know-how, iSCSI can rival current Fibre Channel speeds. The Gem Group's Smith opted for HP switches that will support 10G Ethernet if the company needs to go that route, but he also went with enterprise-class connections rather than standard network interface cards to optimize performance.

"We do multiple connections, on each server. I go with a two-port QLogic card with two 1GB connections. You can connect that into the SAN in active/active mode. People say Fibre Channel is faster at two or four gigs, but I already have two gigs with iSCSI," Smith says.

Storage analysts see the writing on the wall. "We believe that iSCSI will be the dominant SAN interconnect over time," the Enterprise Strategy Group's Asaro says. "Although Fibre Channel is the leading storage-networking interconnect, it is not ubiquitous because ultimately, it is expensive and complex." Companies that have implemented it see the value in terms of performance and reliability. "However, Fibre Channel has not reached universal adoption and therefore requires either complementary or replacement technology. This is where iSCSI plays a vital role," he says.

Sloane of Info-Tech agrees. "There is tremendous growth opportunity. For iSCSI there is nowhere to go but up."

Darrow, a Boston-area freelance writer, can be reached at badarrow@comcast.net.

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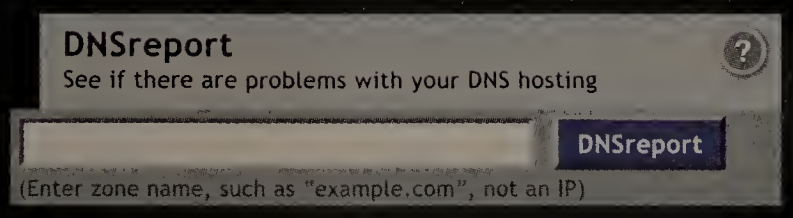

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Human factors critical to data center management

By John Burke

Secrets of running a data center well

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The most successful data center I ever saw was anomalous in several ways that I think are worth considering. First, and most shockingly, it was much too large for the equipment it needed to contain. It was not brand-new and yet to be filled, either. Instead, it had been carefully managed so that as servers became smaller and more powerful, the need for space shrank. Nothing in it was new for the sake of newness, nothing in it was upgraded, expanded, or replaced without a solid business case, and when things were replaced, they were replaced - that is, the old system left after the new one came on line. Some commodity activity, like Web serving, was outsourced.

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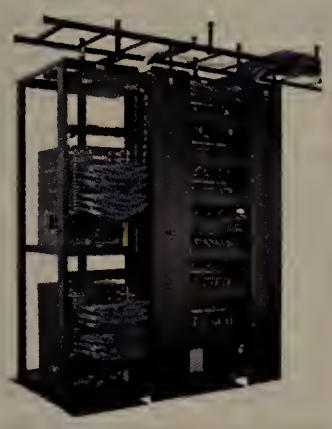

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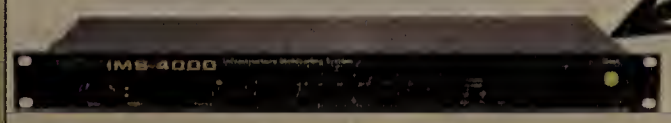

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WiMAX still has long way to go

But Cisco buyout of WiMAX vendor could boost the wireless technology

BY JOHN COX

Cisco's deal to acquire WiMAX-equipment vendor Navini shines a bright light on this emerging technology. For corporate network executives, however, the light is largely ornamental because there aren't any WiMAX networks in the United States, at least on any scale, so the slowly growing inventory of WiMAX client cards or adapters, or customer-premises equipment generally is high-tech paperweight — at least for now.

In a recent study, Solis concluded that WiMAX services will be widely available by 2009, and projects 95 million "fixed" CPE users and 200 million mobile device users equipped with WiMAX by 2012. in addition, a study by Infonetics Research, based on interviews at 550 companies, predicts that mobile WiMAX will be adopted by 11% of them by 2011.

WiMAX is the term for products based on the first IEEE standard for wireless broadband access: 802.16d for fixed, and 802.16e for mobile WiMAX. Most analysts ultimately expect to see offering in both, with data rates of 1M to 4Mbps.

"Enterprise deployment can use fixed WiMAX to provide network connectivity and Internet access, and backup connections; and small business will use fixed WiMAX as an alternative to T-1s," says Phil Solis, WiMAX analyst with ABI Research. "Mobile WiMAX will be used by enterprise customers and consumers, with consumers having a wider array of devices to use on the network, such as mobile Internet devices and consumer electronics, such as portable media players, game devices [and] cameras."

"The combination of fixed and mobile is a major difference of WiMAX compared to cellular," says Monica Paolini, president of Sensz Fili Consulting, which tracks the wireless market. "Cellular services can not support mass-market adoption of bundled fixed and mobile services, but WiMAX can."

WiMAX achieves its data rates from a combination of advanced technologies that will also eventually undergird the evolution of both GSM and Code Division Multiple Access (CDMA) cellular networks. Cellular carriers, however, are pushing significant gains in Evolution Data Optimized (EV-DO) Revision A and High-Speed Downlink Packet Access (HSDPA), and promise still higher data rates in the next few years.

WiMAX, however, also offers now, besides multimegabit data rates, an all-IP network. Among other things, IP makes for simpler and less expensive network infrastructures. "One of the key components of whatever the [eventual] '4G' standard will be is that is has to be all IP," says Daryl Schoolar, IDC's research manager for wireless and mobile infrastructure. "It makes for a more efficient Internet network, compared to running IP over a voice network."

The first mobile WiMAX services — from Sprint Nextel and ClearWire — won't be activated before May 2008 on the licensed 2.5GHz band. Sprint has said its network now dubbed XOHM, will be available to 100 million users by the end of 2008. "That's a pretty aggressive timeline," says Jeff Orr, senior analyst at Maravedis, which covers the wireless broadband access market. Orr says smaller regional WiMAX providers, such as Digital Bridge Communications, are leasing 2.5GHz spectrum in the so-called Instructional Television Fixed Service band, originally set aside for colleges and universities to offer distance-learning TV broadcasts.

According to analysts, base station and client equipment currently certified by the WiMAX Forum runs only on the 3.5GHz frequency, which in the United States is reserved for military use. Some fixed-WiMAX-compatible, but not yet certified equipment is available on the 5.8GHz band. Orr expects these products to win certification in the future.

Orr says the quick uptake in advanced cellular data services, such as EV-DO Revision A and HSDPA, could be preparing the ground for acceptance of mobile WiMAX services. "People have a chance to see what these data services are like, with various device form-factors, and getting Internet access with speeds closer to [wired] DSL all the time, with no location restrictions," he says. Mobile WiMAX, however, should match or exceed the wired speeds people are used to at home, he says.

These services probably will be very affordable, according to analysts and vendors. Network providers can use their existing cell or wireless broadband sites, for example, keeping property and construction costs down. The open-standards approach of WiMAX introduces strong competitive market pressures to every component in the WiMAX network, Orr points out. By contrast, CDMA networks have a cost structure that's determined in part by the royalties set by the company that controls the CDMA intellectual-property portfolio, Qualcomm.

Executives at Nortel say their studies show that WiMAX networks can be deployed at as little as one-sixth the cost of today's 3G networks. "Base stations are smaller, more compact than for 2G and 3G nets, and because it's based on a flat IP architecture, WiMAX means there's less networking infrastructure needed," says Danny Locklear, Nortel's director of wireless product marketing.

With Orthogonal Frequency-Division Multiplexing (OFDM), and the use of wider radio channels, the capacity of each base station is greater. "You can use fewer base stations to cover the same area [compared to 2G or 3G], or you can have the same number of nodes with greater performance," Locklear says. "Many more subscribers can be brought into the [WiMAX] network."

Sprint CTO Barry West in the past has made a similar argument, saying that WiMAX is one-tenth the cost per bit of CDMA. "It's as simple as that," he said in an earlier *Network World* interview. "It's physics."

WiMAX could spark other changes, according to Maravedis' Orr. Today, customers register and use one handset on a wireless network. With IP-based WiMAX, he says, users can use multiple devices on the IP network: multimedia devices; VoIP phones; and even devices that today you have to hook to a PC, such as digital cameras or iPods. "Don't expect Kodak to introduce a device that has to be certified by Sprint before it can be used on the network," he says. ■

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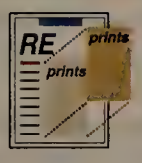

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BACKSPIN

Mark Gibbs

Look out! It's FrankenSCO!

This is a real Halloween story: A few weeks ago the Santa Cruz Operation looked like a zombie. The company filed for Chapter 11 protection on Sept. 14, one month after a federal district court judge ruled that SCO wasn't the owner of the Unix operating-system copyrights that the company had used as the basis for litigation and extortion.

The court further concluded that the copyrights are owned by good old Novell (yes, it is still around) and ruled that "SCO is obligated to recognize Novell's waiver of SCO's claims against IBM and Sequent" and, even better, now owes Novell $30 million in royalties. Darl McBride, SCO's CEO, was quoted as saying, "We want to assure our customers and partners that they can continue to rely on SCO products, support and services for their critical business operations." Hah!

Now, I won't attempt to summarize the whole history of what has been a sordid tale of manipulative and unethical behavior on the part of SCO, but I do want to examine the various companies that have kept SCO afloat despite the blindingly obvious.

Back in the middle of 2003, about six months after SCO first announced it was going to investigate infringement of its intellectual property (that is, Unix), it launched SCOsource. This was a business division created to manage the company's intellectual property, along with a license program for companies using Linux.

In essence, the license — priced at $699 per server processor, $199 per desktop system and $32 per embedded system — was the high-tech version of an organized-crime protection racket. In this case the protection was from SCO suing in the future, should the courts confirm its claims that Linux included its intellectual property.

There's no definitive list of which companies ponied up the license fees, but a few are known: EV1Servers (a hosting company, for a reputed $850,000), CA (as part of a $40 million deal), Questar (an energy company, for an unknown amount) and Leggett & Platt (a manufacturing company, also for an unknown amount).

These companies displayed a complete lack of spine in buying "protection." We can only conclude their management and lawyers were total wusses. What we do know is that their license fees in no small part prolonged the whole farce. Without their money, SCO's bankroll would have dwindled considerably faster. After all, SCO's biggest expense was legal services. In the last quarter, the company's legal bill was $9 million.

Two other notable organizations purchased SCOSource licenses: Microsoft and Sun — but not because either was in any way worried about prosecution. You would have to be pretty naïve not to conclude that the two companies saw contributing to SCO's coffers was simply a way to dampen the market's enthusiasm for Linux. Of course, since then Sun has — to understate the case — changed its tune regarding Linux. Also keeping SCO in the game was BayStar Capital and the Royal Bank of Canada, which together invested $50 million in 2003.

So, who are the investors saving SCO from bankruptcy now? JGD Management has offered $36 million (see www.nwdocfinder.com/2251). This is like someone agreeing to become captain of the Titanic after it has hit the iceberg.

While I understand the reasons that SCOSource licensees coughed up, I am at a loss as to why investment companies injected so much cash into what was obviously IP-trolling at its ugliest, and why new investors would want to buy a hollow, rotting shell. SCO has turned from a zombie into Frankenstein. Will the horror never end?

It can get scary in Ventura, Calif. Trick or treat at backspin@gibbs.com.

NETBUZZ

News, insights, oddities

Paul McNamara

Unlimited gall to cost Verizon $1 million

New York state has given Verizon Wireless a million new reasons to understand that even when used in advertising, the word "unlimited" should mean what it means elsewhere in polite society.

New York Attorney General Andrew Cuomo announced last week that his office had beaten a $1 million "agreement" out of Verizon Wireless that will see the carrier compensate 13,000 customers it had summarily disconnected from their "unlimited" plans because they had taken the word to mean what it means.

Cuomo's office found "that Verizon Wireless prominently marketed these plans as 'Unlimited,' without disclosing that common usages, such as downloading movies or playing games online, were prohibited. The company also cut off heavy Internet users for exceeding an undisclosed cap of usage per month."

A million bucks is essentially petty cash for a company this size — the public-relations beating will likely prove more costly — but the episode should nonetheless act as a deterrent for other carriers tempted to sprinkle their advertising with manure. At least that's the theory.

As for Verizon's take on the matter? Well, it was priceless: "We are pleased to have cooperated with the New York Attorney General and to have voluntarily reached this agreement," a company spokesman told Associated Press. "When this was brought to our attention, we understood that advertising for our NationalAccess and BroadbandAccess services could provide more clarity."

See, it was all a big misunderstanding.

Here at Buzzblog we like to believe that we go out of our way to accept business-speak for what it is and not immediately presume the worst about corporate intentions.

Such latitude, however, is not unlimited.

$2 a month? — Too much!

No one ever wants to pay anything for something they've been getting all along for free (hence, the hokey, old admonition about cows, milk and sex before marriage.)

So, it should come as no surprise that 72% of respondents in a new survey by Parks Associates contend they would abandon their favorite social-networking site altogether before paying a measly two bucks a month. The surprise is that almost 28% claim they would be willing to pony up.

But what people profess in polls and what they do in the privacy of their own Web browsers are not necessarily one and the same.

As predictable as that 72% may be, it says here that a bunch of those folks are not being truthful with themselves, the firm doing the poll or both, because if MySpace started charging $2 a month tomorrow, there is no way in this or Second Life that three out of four MySpacers would just drop their precious pages and their friends like fifth-period French. There would be caterwauling and a meaningful number of defections, but I'm thinking it's more likely that three out four would pay to stay than that three out of four would walk.

Two bucks a month? Heck, even to teenagers that's chump change these days.

Of course, the difficulty both with such surveys and disputing their conclusions is that there is really no way to settle the argument short of one of these sites actually asking for $2 a month.

Go ahead, MySpace, call their bluff (it's not my money).

I'm considering collecting a $2 fee before I'll open e-mail from readers. The address is buzz@nww.com.

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